Hawaii Longline Observer Program

Observer Field Manual

Pacific Islands Regional Office

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Pacific Islands Region
National Marine Fisheries Service
National Oceanic and Atmosphere Administration
United States Department of Commerce

Forward

For biological technicians working as fisheries observers on contract in the Hawaii Longline Observer Program travel procedures, authority, and personnel issues may differ from the policies in this manual depending on your employment status. For further clarification on these issues or any other, individuals are encouraged to contact the PIRO Observer Program Operations Coordinator, or their Contracting Agent.

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Preface

This manual is intended to provide the Hawaii longline observer in the field with reference of data collection protocols and definitions of each datum collected. The Scientific Technician serving as an observer will also find guidance in prioritizing the work, and general discussions of expectations and policies. This manual is not intended to be a comprehensive observer handbook, and would be of limited use to readers that have not completed the PIRO Hawaii Longline Observer training course.

This manual version includes all changes and updates of the earlier versions.

LIST OF ACRONYMNS

Agencies

DOC US Department of Commerce

NMFS National Marine Fisheries Service

NOAA National Oceanic and Atmospheric Administration

PIR Pacific Islands Region

PIRO Pacific Islands Regional Office

PIFSC Pacific Islands Fishery Science Center

USFWS US Fish & Wildlife Service

Laws

CITES Convention on Trade of Endangered Species

ESA Endangered Species Act of 1973

MBTA Migratory Bird Treaty Act

MMPA Marine Mammal Protection Act

MSFCA Magnuson-Stevens Fishery Conservation Act

Observer Program

BFOP Northwestern Hawaiian Islands Bottomfish Observer Program

HLOP Hawaii Longline Observer Program

OC Operations Coordinator

AOC Assistant Operations Coordinator

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Chapter 1 Introduction

Longline Observer Authority and Goal

The pelagic longline fishery based in Hawaii operates mainly in the Northern Central Pacific Ocean. This fishery is managed through a Fishery Management Plan (FMP) developed by the Western Pacific Regional Fishery Management Council and approved by the National Marine Fisheries Service (NMFS) under the authority of the Magnuson-Stevens Fishery Conservation and Management Act. The NMFS has determined in its Biological Opinion issued in November 2002 through the Endangered Species Act (ESA) that the Hawaii based pelagic longline fishery is likely to adversely affect Leatherback, Loggerhead, Olive Ridley, Green and Hawksbill sea turtles.

Another species of concern is the Hawaiian population of False killer whales, *Pseudorca crassidens*. Research done in late 2003 indicates the need for more information to assess the impact of the fishery on the species.

Vessels registered with Hawaii Longline Limited Access permits are required to carry observers, when directed to do so by the NMFS to document the incidental capture of sea turtles. The data are used to verify turtle takes as well as seabird and marine mammal interactions in the fishery. Other data on the fishery are collected to support research undertaken by fisheries scientists at the Pacific Islands Fishery Science Center (PIFSC). The research is directed at several different issues such as; understanding the basic biology of the species encountered, identifying factors that influence the bycatch rates of selected species, and the economic factors that affect fishing behavior for example.

Objectives for Longline Fishery Observers

To meet NMFS field responsibilities, the following objectives are established for scientific technicians working as observers aboard longline fishing vessels:

Obtain reliable information about the incidental interaction of sea turtles.

Record fishing effort

Document interactions of other protected species (marine mammals & seabirds)

Record the number of fishes kept and discarded

Collect biological information from selected species.

Guidelines

With ***SAFETY*** and ***INTEGRITY*** as the watchwords of your job, it is of primary importance that you conscientiously follow the guidelines outlined below:

It is your responsibility to observe and accurately record biological research data as instructed. Everything you record is available to the vessel operator or his designate and is subject to legal interpretation. Almost everything you record may be made available as public information. You are not to record extemporaneous comments or personal opinions. It is not your job to evaluate or interpret data, simply record your observations on the data forms that you are issued.

It is your responsibility to maintain open communication with the vessel operator and other vessel personnel to facilitate a clear understanding as to what data are being collected.

It is your responsibility to advise the vessel operator of all data items recorded. If he or she is in disagreement with you, allow operators to record their views on the original data forms. If they so choose, the vessel operators may record their own comments on these forms.

You are hired to be an observer, *not an enforcement agent*. You are not empowered to write citations, make arrests, or carry out enforcement activities. Your responsibilities require you to make observations and collect data, some of which pertain to federal regulations. There is no guarantee that your data will not be used as evidence to assess penalties. Government attorneys perform legal interpretation.

Your responsibility of observing and recording data is to be performed in such a manner as to minimize interference with fishing operations. Likewise, the vessel operator and any other vessel personnel are not to interfere with your duties.

Responsibilities

Sea-assignment readiness is determined by personal fitness, training preparation and staff assessments.

Alcohol dependency and other illicit drug use are incompatible with observer duties and are not tolerated. If detected, disciplinary action will be initiated.

Observers should not keep personal diaries during a cruise assignment. This does not include materials issued to you for documentation purposes.

Because observer objectives are mandated by federal regulations, personal research is prohibited aboard vessel assignments.

Retaining specimens (especially “edible” specimens) of any kind for any personal reason is prohibited.

Intentionally entering the water from an assigned vessel is prohibited; such activity will compromise personal safety and data collection duties.

Observers do not choose vessel assignments; however **observers have the right to refuse deployment on a vessel they perceive as unsafe.** Management selects sea

assignments through a predetermined sampling plan and confirms that the boats meet minimum U.S. Coast Guard safety requirements. Any refusal to board a vessel after an inspection must be documented and discussed with management to determine the appropriate course of action. Fishing activity dictates vessel departures and arrivals. Since vessel notification requirements may limit response time, observers should be prepared for sudden sea assignments of extended and uncertain duration.

An observer's vessel assignment (trip) continues until the vessel returns to port to unload its catch. Occasionally, the port of arrival will be different than the port of departure. In these instances, the trip is considered completed when the vessel arrives in port to offload its catch. If you are directed by the PIRO Observer Program (or a designated authority) to remain on the vessel and observe the subsequent fishing trip do not use the same trip number. Contact the PIRO Observer Programs office in Honolulu or your contractor for the trip number to use.

Never leave your assigned vessel prematurely without approval from the PIR Observer Program Coordinator, Port Coordinator, or acting designate; **to do so is grounds for dismissal.**

Safeguard the return of your data to the port field station. Your work is a valuable investment; treat it like your wallet. **Data loss may be grounds for dismissal.**

Chapter 2 Summary of Duties

Employment Purpose

When aboard an assigned longline vessel, observers collect objective and accurate data on the following:

Vessel fishing gear characteristics and operations,
Species composition of the catch,
Incidental catch of protected species, and
Biological (life history), data

SAFETY and **INTEGRITY** continue to be the essential watchwords for observer performance and conduct.

General Duties

Work at sea and on shore

Work under the direction of the PIRO Administrator and Operations Coordinator

Collect research and management data from the Hawaii longline fisheries

Work at sea aboard longline fishing vessels

Collect data on vessel activity and fishing operations

Identify protected species, target species, and by-catch species

Record the number and position of protected species, target species, and by-catch species caught during fishing operations or sighted during the cruise.

Tally sea turtles observed during fishing activity

Dissect selected species

Record biological data for sea turtles and other selected marine species

Review collected data and enter data into the database

The Observer's Role

(adapted from an article by P. Cullenberg and K. Rivera in the OTC Quarterly, vol 8, #3)

Since February 1994, observers have played a role in monitoring interactions between the Hawaii based longline fleet and sea turtles in the north-central Pacific. Starting in 2000, the observer's role expanded to cover seabird bycatch in the fishery as well. The observer program has greatly improved the understanding of what the levels of bycatch and interaction are, and what changes can be made in the fishery for the benefit of fishermen and protected species.

When stepping on to a fishing vessel for one day, one week or one month, you the observer are entering a workplace and a home. It is a place where the crewmen have already established a system of communication and responsibilities. An individual observer's ability to deal with the situation is a reflection of the person's flexibility and resiliency. The environment can be lonely, un-welcoming, cramped, and sometimes hostile. Your sleeping and eating habits will definitely be disrupted. The quality of your working relationship with the crew can be more important to the overall nature of the trip than the nature of the vessel itself. A good working situation with the crew makes a good trip. A good working situation on a good boat makes a great trip!

A longline observer's job in Hawaii has two important phases. The first is the initial collection of the data at sea. The second is processing and verifying the data on land. At the end of a trip, you'll begin the debriefing phase. This is where the data you collected are reviewed, first by yourself and secondly by a debriefer. As part of the initial reviews, you may be asked questions on species identification, clarification of notes or comments and possibly to document some information for enforcement issues. After the initial checks, you'll enter the data in the Longline Observer Data System (LODS).
Typically the entire debriefing process takes 2-3 days, maybe more after returning from your first trip. It is important no not take the debriefing process personally. Everyone involved wants to make sure the data provided by the observer program are the best as can be.

Some quotes on observing:

"I simply was not prepared to be so cooped up; trapped in such a small place surrounded by cigarette smoke. I hate to sound so dramatic, but this certainly isn't the life for everyone, and I think potential observers need to be aware of this."
–Anonymous, NPGOP observer

"They tell you how hard life at sea is, and the condition you may face, but they never mention how hard of a mental strain it is."
–Anonymous, NPGOP observer

"If you don't like to read, learn to like it. Take the number of books you think you can read, and double it."
–Joe Arceneaux, HLOP observer

Before A Vessel Assignment

Placement Meeting

Before each cruise, observers will meet with the vessel operator to review respective responsibilities. The meeting usually will be led by the Port Coordinator, or acting designate. Occasionally, observers may have to conduct their own placement meetings. After the meeting, observers have the responsibility to place their gear aboard their assigned vessels and to be aboard **at least l/2 hour** before the scheduled departure time**.**

- Observers assigned to a vessel should report to their contractor representative each day until their vessel departs.

- An observer's cruise assignment (trip) begins when the vessel leaves port to conduct fishing operations.

During a Vessel Assignment

These lists of do's and don'ts, is the same list that is reviewed with vessel captains during the placement meetings before each cruise.

Observers are to:

- Collect objective data on vessel activity

- Record catch information on target and non-target species

- Perform their duties in such a manner as to minimize interference with fishing operations.

- Keep open communication with vessel personnel by informing them about observer duties and collected data

- Obtain permission from the vessel captain before using any vessel equipment

- Collect the appropriate specimens as instructed.

- Use issued cameras only for photographing specimens

- Clean up immediately and thoroughly after completing required dissections

- Keep gear and equipment well maintained during sea assignment

- Maintain protective gear. This includes rain gear, boots, hard hat, PFD, Emergency Position Indicating Radio Beacons (EPIRBs), and immersion suits.

Ask the captain about emergency procedures and familiarize themselves with the locations of life rafts, fire extinguishers, and first aid kits.

Remain aboard their assigned vessels until the vessels return to port to unload their catch.

Share housekeeping routines such as dish washing and general clean up with the crew.

Note: It is incumbent upon observers to maintain his or her personal hygiene. Bathe or shower as allowed, recognizing that fishing vessels are often cramped and freshwater for bathing may be in limited supply.

Observers are not to: Compromise data.

- Dictate procedures or direct fishing operations.
- Be involved with crew responsibilities, such as standing watch or helping with fishing procedures.
- Keep personal diaries in any form.
- Bring aboard personal recording devices.
- Bring aboard personal computers without permission of the captain.
- Record extemporaneous, or personal comments.
- Conduct personal research of any kind.
- Keep specimens or edible fish of any kind.
- Discuss boat business from one vessel to another or to any fishermen on shore.
- (This includes information on fish catches, locations, and arrival dates.)

Captains are to:

- Cooperate with the observer in the performance of the observer's duties.
- Ensure safe embarking and debarking of the observer.
- Provide observers living quarters comparable to a full crewmember.
- Provide observers with meals, snacks and amenities normally provided to crew
- members (owners will be reimbursed for observer living expenses, as specified by federal regulations at a rate of $20/sea day).

- Allow the observer access to areas of the vessel necessary to conduct observer duties.

- Allow the observer access to communications and navigation equipment, as necessary to perform observer duties.

- Notify the observer in a timely fashion when commercial fishing operations are to begin and end.

- Provide true vessel locations by latitude and longitude, upon request by the observer.

- Bring aboard marine species affected by fishing operations for biological
- Processing, upon request by the observer.

- Provide refrigerated bait well storage space for observer collected specimens.

- Record personal statements on the back of the observer's original forms, if they disagree with the observer's collected data.

- Comply with other guidelines, regulations or permit conditions that the National Marine Fisheries Service (NMFS) may develop to ensure the effective deployment and use of observers; and

- Ensure, even for trips with observers aboard, that Daily Longline Fishing Logs are maintained aboard the fishing vessel as required by NMFS.

Captains are not to:

- Ask observers to stand watch or help with fishing operations

- Forcibly assault, harass or sexually harass observers

- Intimidate or attempt to influence observer

- Interfere with or impede observer duties

- Fish without an observer onboard the vessel after the owner or agent of the owner has been directed by NMFS to make accommodations for an observer.

Interference and Harassment

Record in the Hawaii Longline Observer Program Documentation Notebook, any attempt to interfere with you or your observer work, including harassment, by preparing brief, non-inflammatory answers to **Who, What, Where, When, Why, How and How many times.**

- Harassment is defined as conduct which has the purpose or effect of unreasonably interfering with the observer's work performance, or which creates an intimidating, hostile or offensive environment.

- Federal law defines sexual harassment as "any unwelcome conduct of a sexual nature which has the purpose or effect of substantially interfering with an individual's work performance or creating an intimidating, hostile, or offensive working environment."

Injuries

- If you are injured while aboard an assigned vessel, record the details in the Hawaii Longline Observer Program Documentation Notebook. Record the time of the occurrence, the type and extent of the injury, how it occurred, what treatment you received, by whom, and the names of any witnesses.

- You may be eligible for compensation under the Federal Employee's Compensation Act (FECA) under an extension of the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA)
    - section 403(c).

- The MSFCMA section 403(c) reads as below:
    - *"An observer on a vessel and under contract to carry out responsibilities under this Act or the Marine Mammal Protection Act of 1972 (16 USC 1361 et seq.) shall be deemed to be a Federal Employee for purposes of compensation under the Federal Employee Compensation Act (5 UC 8108 et seq.)"*

- If you are an observer working for the NMFS or under contract as above, you are covered under FECA regardless of how long you have worked as an observer or your work schedule, including is you work on a seasonal, part-time, intermittent or contracted basis.

- If you are injured aboard a vessel, you are legally required to notify the captain within seven days of any injury or illness incurred while aboard the vessel.

- Make sure to report any injuries or illnesses incurred during a cruise to your employer and your debriefer.

- In order to obtain FECA benefits, you should submit the appropriate FECA claim form within 30 days of the injury. The most common FECA claim forms are:

    - CA-1 *Federal Employee's Notice of Traumatic Injury and Claim for Continuation of Pay/Compensation.* Traumatic injuries are defined as a wound or other condition of the body caused by external force, including stress or strain. Traumatic injuries must be caused by a single specific event or a series of events or incidents within a single day or work shift.

- CA-2 *Notice of Occupational Disease and Claim for Compensation*. Occupational diseases are defined as a condition produced in the work environment over a period longer than one workday or shift. It may result from systemic infections, repeated stress or strain, exposure to toxins, poisons, or fumes, or other work conditions of the work environment.

After a Vessel Assignment

- An observer's cruise assignment ends when the vessel returns to port to sell its catch.

- Observers are accountable for all data, issued equipment, and manuals. Observer gear should not be left unattended. To avoid being charged for unserviceable gear, return broken and worn out equipment.

- **Loss of data is grounds for dismissal.**

- After each sea assignment, observers are to complete the following forms:

  A. Vessel Reimbursement verification.
  B. Post-cruise questionnaire.
     *At the conclusion of their first trip, each observer will also fill out first trip training critique-questionnaire.

- After a cruise, each observer should ask if there have been changes to the procedures for data editing and entry.

Travel Responsibilities

Always conduct yourself in a courteous and professional manner. When departing from any port other than Honolulu, board your assigned vessel as soon as possible.

Keep your collected data and cameras, in close possession at all times. **Do not check data as baggage. Do not mail originals.**

Remember your data are the result of a significant investment; treat it as you would your wallet; do not entrust it with anyone except observer program staff.

If you incur expenses during transit to or from your vessel; retain all receipts.

If you encounter any travel delays, contact your contractor or the NMFS Pacific Islands Region Observer Program Office as soon as possible.

No data is better than bad data!

Chapter 3 Data Collection Instructions

General Instructions

If the information requested on a data collection form is not available or not applicable, leave the data field or code box blank. Describe the situation in the Documentation Notebook. (Use the Documentation Notebook to describe any situations during the trip that you feel should be recorded when there is no form or designated area for the particular situation.)

1. Use a soft (No. 2) pencil on all forms. Line out any errors, and write the correct data above the struck item. **Do Not** try to make changes over a number that is already recorded.

2. Print legibly.

3. Observe and accurately record descriptive and quantitative data with explicit notes and explanations. Record data as events occur, trust nothing to memory.

4. Record times as four digits using the 24-hour clock, for example, 5:30 P.M. is written as 1730, but 5:30 A.M. is written as 0530. Use Hawaii Standard Time.

5. **Protected species are top priority.** Never allow collection of secondary data to interfere with the collection of protected species data.

6. If data are not available in the proper units, write the measurement and units in the margin or comments section for later conversion, for example, meters from fathoms.

7. If additional space is required on a data form, continue data entries on additional forms.

8. Include all pertinent facts when writing notes or narrative explanations. Remember that people who were not present will read about this event(s) you are describing. Don't assume that the readers will automatically *know* what you are describing if you did not write it down.

Data Collection Priorities

As an observer in the Hawaii longline fishery your primary duty is to obtain reliable information about sea turtle and other protected species interactions. Therefore, a data collection hierarchy has been established and is described below. Observers are expected to know what to accomplish first. If work is interrupted or curtailed, this will help prioritize tasks.

Process animals in the following order of priority:

- Sea turtles
- Seabirds
- Marine Mammals
- Billfish
- Sharks
- Tunas

Sample and Data Collection Priorities

Samples

- Sea turtles, skin biopsies or whole dead animals

- Seabirds, whole - leave any leg bands present on the bird

- Marine mammal skin biopsies

- Selected biological samples from fish, as directed - see Circular Updates.

Data

- Collect & document data from all incidental catches and interactions of protected species. Sea turtles have the highest priority. Seabirds are second, and marine mammals are third.

- Record species composition and disposition of the catch.

- Record fishing locations and gear characteristics.

- Collect fish & shark measurements.

- Describe all incidents where tags are applied, observed, or removed on any caught animal.

Sample Collection General Comments

Make collections only if you have the proper storage medium & space.

It is best to collect a complete set of samples from an individual fish. A complete set of billfish samples includes: anal fin, otoliths, ovary samples, and the full stomach. Shark samples consist only of a tissue sample stored in ethanol or DMSO.

If you are collecting **full stomachs**, they **must be frozen**. Do not store stomachs on ice or in a refrigerator. The proteolytic enzymes remain active and will break down the stomach and its contents.

Specimen Collection Protocol

Refer to the appropriate Circular Update packet and the collection protocols in the Appendix of this field manual.

If resources permit, selectively collect specimens from very large **(**>200 cm EFL) and very small **(**<100 cm EFL) swordfish. It may be easier to collect the entire fish if it is very small.

Comments

Record all specimens & samples collected on the Specimen Log.

Specimen Numbering System

Each sample or specimen collected by an observer will have a unique 12 character specimen number assigned to it. This number, the specimen number, is composed of the *Trip Number*, *Set Number*, *Catch Log Form Page Number*. and *Catch Log Form Line Number*. Label each sample and record the information on the Specimen Log.

When filling out a specimen tag, include the following:

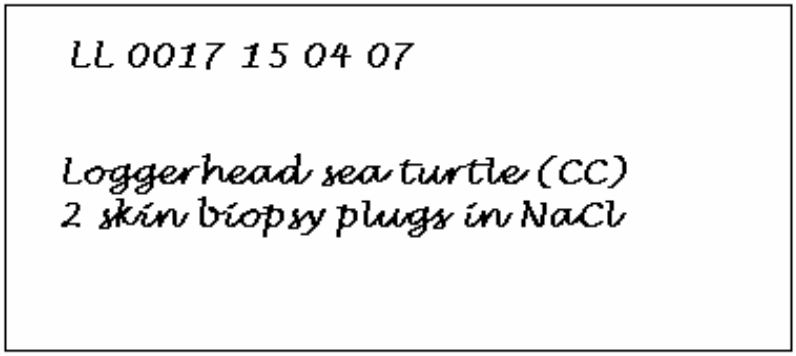
- Specimen number
- Species common English name
- Species code
- How the sample was stored

See the two following examples .

Example Specimen Tags

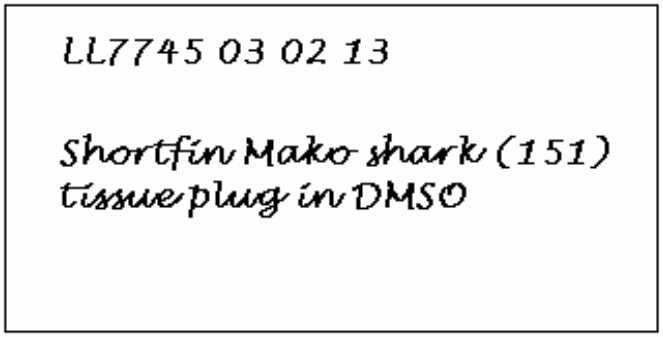
Example 1.

Loggerhead sea turtle on Trip # LL0017. Set 15, Catch Log Form page 04, line 07.



The specimen number for example 1 is **LL0017150407**

Example 2. Shortfin Mako shark on Trip # LL7745. Set 03, Catch Log Form page 02, line 13.



The specimen number for example 2 is **LL7745030213**

Chapter 4 Trip Specifications Record

Introduction

The **T**rip **S**pecifications **R**ecord is used to record the specifics of the fishing trip. It is the only record of the vessel name, permit number and the name of the operator. When separated from other observer data, the data cannot easily be associated with a specific vessel or operator. This form is completed only once for each observed fishing trip.

General Instructions

Most of the information that is recorded can be obtained by direct observation and measurement. However, specifics about some vessel equipment can be obtained by asking the operator. This form can be completed throughout the trip to allow the observer ample time to ascertain the information.

Data Elements

Observer ID - in the upper left corner of the form, fill in the spaces with the Observer ID number assigned to you during training.

Declared Trip Type – the type of set the vessel will make on this trip. The Port Coordinator will tell you what type of setting the vessel will employ during the cruise. Write in the appropriate letter code in the box. There are only two types of sets, Deep Sets or Shallow Sets. If the set type is *Deep Set*, then enter **D** in the box. If the set type is *Shallow Set*, then enter **S** in the box.

If the vessel did not declare the type of set they will fish when they called in, enter **N** for *Non-declared*. Do not change the Declared Trip Type, if the type of gear configuration ("set type") fished during the trip is different from what was declared before the start of the trip. This box must be filled in, it cannot be left blank.

Trip Number - in the upper right corner, enter the unique six-character number assigned by the Operations Coordinator. In the first two blocks enter **LL** for longline. Starting in the third block, enter the four-digit number.

Manual Version – in the upper right corner of the form, fill in the spaces with the Manual Version number. It can be located on the title page of the manual. The first two characters are **LM** for longline manual.

Documentation Number - the 6 to 7-digit number (is) assigned to the vessel by the US Coast Guard. It is painted on the sides of the pilothouse, the stern and both sides of the bow.

Vessel Name - print in block letters the name of the vessel as it appears on the bow, transom or official records. It is not necessary to precede the vessel name with F/V "fishing vessel."

Vessel Length - the overall length of the vessel in feet. This value can be retrieved by the debriefers from the USCG if you can not find the correct documented vessel length.

Operator Name - print in block letters the first name, middle initial and last name of the person responsible for operation of the vessel. Confirm the spelling of names you may be unfamiliar with. If the operator has no middle name, then write "(N.M.I.)" for ***N****o* ***M****iddle* ***I****nitial,* after the operator's first name.

Departure Date - the date the vessel first departed for the fishing area. Use two digits for the day. Write the first three letters of the month (*ex.* JAN, FEB, MAR). In the last two spaces, write in two digits representing the year. Example; August 15th, 2003 would be recorded as 15 AUG 2003.

Time - the time that the vessel first departed for the fishing area. Use Hawaii Standard Time and the 24-hour clock.

Port of Departure - print in block letters the name of the port city the vessel departed from, e.g., Honolulu.

Intermediate Port Stops - occasionally, some trips will include port stops for reasons other than to unload the catch. If your assigned vessel makes a port stop, complete the required lines in the section. Sometimes a vessel will leave from the pier to tie up in another part of the port to take on ice, bait or other supplies. These stops should not be considered port stops. As a rule a stop is considered a port stop if the vessel has been out of the harbor for more than 30 minutes before returning. If no port stops are made, draw a diagonal line through this section.

Stop Number - record a single digit indicating the number of the port stop starting with **1**.

Port Stop Date - the date the vessel returned to any port for any reason other than the end of the trip. Use the standard date format (*ex.* 24 JUL 2003).

Time - the time that the vessel returned to port for any reason other than the end of the trip. Use Hawaii Standard Time and the 24-hour clock with two digits for the hour and two digits for the minutes.

Date Cruise Resumed - the date that the vessel departed port after Port Stop 1 to resume fishing.

Time -the time that the vessel departed port after Stop 1 to resume fishing.

Arrival Date - the date the vessel returns to port after completing the fishing trip.

Time -the time that the vessel returns to port after completing the fishing trip.

Port of Arrival - print in block letters the name of the port city the vessel returned to, *ex.* Honolulu or San Pedro, CA.

Comments - use this section to explain details of port stops or to record information not included in the data boxes.

Chapter 5 Longline Set & Haul Information

Introduction

The **L**ongline **S**et and **H**aul **D**ata form is used to record the basic set and haul parameters of longline sets on observed trips.

General Instructions

The information necessary to complete this form is obtained through direct observation. If the information for any data elements is not available or applicable, leave the field(s) blank and describe the situation with notes on the back of the form. If additional space is needed for notes, use extra paper.

The incidental take of protected species is extremely important to the management of this fishery. **Observers must observe the entire haul back (gear retrieval process).**

Data Elements

Form Header

Observer ID - in the upper left corner of the form, fill in the spaces with the Observer ID number assigned to you during training.

Trip Number - in the upper right corner, the unique six-digit number assigned by the Operations Coordinator. In the first two blocks enter **LL** for longline. After the second block, enter the four digit number.

Set Number - sets are numbered consecutively for each observed trip beginning with 01.

Log Book Page Number - record the page number from the *NMFS W. Pacific Daily Longline Fishing Log* that the captain uses to report the catch for this set. **Note:** Right justify and do not use leading zeros.

Set Information Block

Begin Set

Date - the date when the setting operations start (the first piece of gear goes into the water.) Use the standard date format

Time – record the time when the setting operations start. Record times using the 24-hour clock and use Hawaii Standard Time.

Latitude - the latitude of the vessel at the beginning of the setting operation. Enter *Degrees, Minutes and Tenths of Minutes*. Obtain positions from the GPS unit on the vessel. Enter **N** in the trailing block for the Northern Hemisphere, and **S** for the Southern Hemisphere. (*ex.* 21° 18.3 N)

Longitude - the longitude of the vessel at the beginning of the setting operation. Enter *Degrees, Minutes and Tenths of Minutes*. Obtain positions from the GPS unit on the vessel. Enter **E** in the trailing block to indicate East longitude and **W** for West longitude. (*ex.* 157° 55.3 W)

Weather Code - record the two digit number representing the weather conditions at the beginning of the setting procedure.

Beaufort - record the Beaufort Scale number 0 - 10 describing sea conditions at the beginning of setting operation. A wind of a given speed blowing for a sufficient time over a sufficient surface area of water (fetch) produces a characteristic appearance of the sea's surface. The Beaufort Scale describes the characteristic appearance of the sea associated with each numerical level of the Scale. Refer to the reference tables in your manual and on bottom of the form.

In-situ Surface Temperature – Record the sea surface temperature as a 3 digit number in the Fahrenheit scale to the nearest 0.1 degree. Use the vessel's thermistor (thermometer probe). If the vessel does not have a working thermistor, use the issued back-up thermometer.

When using a back-up thermometer, follow these steps. Cast the water collecting container overboard into water which is least affected by external heating from the vessel. Capture enough water to fill the well and insert the thermomter. Allow time for the thermometer to equilibrate before recording the temperature, roughly 10 seconds.

End Set

Date - the date when the setting operations ended (the last piece of gear was put into the water). Use the standard date format.

Time - record the time when the setting operations ended. Record times using the 24 hour clock and use Hawaii Standard Time.

Latitude - the latitude of the vessel at the beginning of the setting operation. Enter *Degrees, Minutes and Tenths of Minutes*. Obtain positions from the GPS unit on the vessel. Enter **N** in the trailing block for the Northern Hemisphere, and **S** for the Southern Hemisphere. (*ex.* 21° 18.3 N)

Longitude - the longitude of the vessel at the beginning of the setting operation. Enter *Degrees, Minutes and Tenths of Minutes*. Obtain positions from the GPS unit on the vessel. Enter **E** in the trailing block to indicate East longitude and **W** for West longitude. (*ex.* 157° 55.3 W)

Weather Code - record the two digit number representing the weather conditions at the end of the setting procedure.

Beaufort - record the Beaufort Scale number 0 - 10 describing sea conditions at the end of setting operation. Refer to the reference tables in your manual and at the bottom of the form.

In-situ Surface Temperature – Record the sea surface temperature as a 3 digit number in the Fahrenheit scale to the nearest 0.1 degree. Use the vessel's thermistor (thermometer probe). If the vessel does not have a working thermistor, use the issued back-up thermometer.

Haul Information Block

Begin Haul

Date - the date when the haul back operation is begun (the first piece of gear was pulled out of the water). This is almost always a radio buoy, and is considered *Float no. 1* for counting purposed on the catch record. Use the standard date format.

Time - record the time when the haul back operation is begun. Record times using the 24 hour clock and use Hawaii Standard Time.

Latitude - the latitude of the vessel at the beginning of the setting operation. Enter *Degrees, Minutes and Tenths of Minutes*. Obtain positions from the GPS unit on the vessel. Enter **N** in the trailing block for the Northern Hemisphere, and **S** for the Southern Hemisphere. (*ex.* 21° 18.3 N)

Longitude - the longitude of the vessel at the beginning of the setting operation. Enter *Degrees, Minutes and Tenths of Minutes*. Obtain positions from the GPS unit on the vessel. Enter **E** in the trailing block to indicate East longitude and **W** for West longitude. (*ex.* 157° 55.3 W)

Weather Code - record the two digit number representing the weather conditions at the beginning of the haul back procedure.

Beaufort - record the Beaufort Scale number 0 - 10 describing sea conditions at the beginning of haul back operation. Refer to the reference tables in your manual and on the back of the form.

In-situ Surface Temperature – Record the sea surface temperature as a 3 digit number in the Fahrenheit scale to the nearest 0.1 degree. Use the vessel's thermistor (thermometer probe). If the vessel does not have a working thermistor, use the issued back-up thermometer.

End Haul

Date - the date when the haul back operation is ended (the last piece of gear was pulled out of the water). Use the standard date format.

Time - record the time when the haul back operation is ended. Record times using the 24 hour clock and use Hawaii Standard Time.

Latitude - the latitude of the vessel at the beginning of the setting operation. Enter *Degrees, Minutes and Tenths of Minutes*. Obtain positions from the GPS unit on the vessel. Enter **N** in the trailing block for the Northern Hemisphere, and **S** for the Southern Hemisphere. (*ex.* 21° 18.3 N)

Longitude - the longitude of the vessel at the beginning of the setting operation. Enter *Degrees, Minutes and Tenths of Minutes*. Obtain positions from the GPS unit on the vessel. Enter **E** in the trailing block to indicate East longitude and **W** for West longitude. (*ex.* 157° 55.3 W)

Weather Code - record the two digit number representing the weather conditions at the end of the haul back procedure.

Beaufort - record the Beaufort Scale number 0 - 10 describing sea conditions at the end of haul back operation. Refer to the reference tables in your manual and on the bottom of the form.

In-situ Surface Temperature – Record the sea surface temperature as a 3 digit number in the Fahrenheit scale to the nearest 0.1 degree. Use the vessel's thermistor (thermometer probe). If the vessel does not have a working thermistor, use the issued back-up thermometer.

Set / Haul Events

Haul Back Direction Code - enter the appropriate two digit code to indicate which end the gear was hauled. If the haul back commences more than five (5) floats from an end, select 03. Other, and describe the float number and situation in the Comments section.

Line Parted? - place a check or X in the box if the mainline unintentionally parted while the gear was hauled.

Number Section Retrieved - if the mainline parts, enter the number of pieces that were hauled back. For example, if the mainline parts one time, then you would enter 02 to indicate that two sections of mainline were hauled back. If the line parts 2 times record 03 in the number of sections hauled back. It is always one more section hauled back than the number of times the mainline parted.

Set Interaction? - Place a check or X in the box if you observed a protected species interaction during the observed portion of the set. If you observe a protected species get hooked during setting operations, place a check or X in the box. If there was an interaction, make sure to record the details in the Protected Species Event Log.

Haul Interaction? - Place a check or X in the box if there was a protected species interaction with the gear during the haul back. If you observe a protected species get hooked during hauling operations, place a check or X in the box. If there was an interaction, make sure to record the details in the Protected Species Event Log.

Comments - Use this section to describe any particulars that could not be codified from the available data element choices. If any data elements were left blank, record what was left blank and why the information could not be collected, in this section. If you run out of room, indicate that there are notes on the back, and continue on the back of the form,

Weather Code Table

00 Not determined	06 Rain
01 Clear	07 Thunderstorms
02 Partly Cloudy	08 Rain & Fog
03 Cloudy (one or more layers)	09 Fog/Thick Haze
04 Drizzle	10 Snow, or rain/snow mix
05 Showers	99 Other

Beaufort Chart

Sea Surface State	Beaufort	Wind Speeds	Wave Height
Surface is like a mirror.	0	Calm	0 ft
Ripples with the appearance of scales, no foam.	1	1-3 kts	¼ ft
Small wavelets, glassy crests, not breaking.	2	4-6 kts	½ ft
Large wavelets, crests break, some scattered whitecaps.	3	7-10 kts	2 ft
Small waves, becoming longer, numerous white caps.	4	11-16 kts	4 ft
Moderate waves, longer form, many white caps, some spray.	5	17-21 kts	6 ft
Larger waves forming, whitecaps everywhere, more spray.	6	22-27 kts	10 ft

Sea heaps up, white foam from breaking waves blown into streaks.	7	28-33 kts	14 ft
Moderately high waves of greater length, edges of crests break into spindrift, foam is blown in well marked streaks.	8	34-40 kts	18 ft
High waves, rolling starts, Foam in dense streaks spray may reduce visibility.	9	41-47 kts	23 ft
Very high waves with over hanging crests, sea takes on white appearance, foam is blown in dense streaks obscuring visibility, heavy rolling.	10	48-55 kts	29 ft

Chapter 6 Gear Configuration

Introduction

The **G**ear **C**onfiguration form is a record of longline fishing gear characteristics. The data on this form are used to describe specific parts of the gear. Vessels may occasionally change or alter their gear according to local conditions. This data can be used with other observer collected data elements to determine the affects on the catch of protected species as well as target species.

General Instructions

This form should be filled out before fishing operations begin. Most of these elements are obtained thorough direct observation or measurement by the observer. There are a few elements with "Reported" in their name. To obtain the values of the *Reported values*, ask the captain, crew or check the packaging labels.

Data Elements

Observer ID: In the upper left corner of the form, fill in the spaces with the Observer ID number assigned to you during training.

Trip Number: Record the number of the cruise assigned by port coordinator.

Set Number: Record the number of the set.

Hooks & Floats Block:

Number of Floats: Record the number of floats used on this set to suspend the gear in the water column. Radio buoys are considered floats and counted the same as the other floats. Occasionally some crews will connect 2-3 floats together. In these cases, all the connected floats would be counted as one.

Hook Type: Select the appropriate code indicating the predominant style of hook used in this configuration. Use the hook reference chart to determine size and style of hook. If the code is 06. Other, describe the hook in the Comments section. If possible, ask for a hook as an example. If more than one hook style is used, record the predominant style and describe all of the hook types used and approximate amounts or percentages in the Comments section.

> ►**How to determine if a hook is offset**. Place the hook so that just the eye is over the edge of a table or other similar flat surface. If the hook, under its own weight, does not lay with the point in line with the shank, it is offset. Offset hooks won't lay flat. Refer to the Hook Size & Style guide in the Appendices of this manual for a diagram of an offset hook.

Hook Size: Record the size number of the hooks used. Ignore "ought" designations. For example a 9/0 hook would be entered as 09. Some hooks (*e.g.* tuna hooks) may have a metric measurement, such as 3.8mm. In that case, disregard the decimal point, and enter the size as 38 in the two boxes.

Hooks/Float: Record the typical number of hooks deployed between the floats. Count several floats (baskets) of gear during the set to find the predominant number. Sometimes the crew puts out hooks inconsistently during the beginning of the set , which is the portion that you are required to observe. If this happens try to get your counts at other times during the set or haul. It is acceptable to collect this during the haul but it is not preferred due to hook loss, tangles, and other higher priority duties.

Number Hooks Set: Count and record the number of hooks deployed on the set. The way to get this number is to count all the hooks/branch lines in the boxes before the setting operations start each day. Once the setting is completed, count the remaining hooks/branch lines and subtract from the first count.

Fishing Techniques

Reported Target Depth: Ask the vessel operator how deep he wants the deepest part of the gear to fish. The units for this are meters. If the operator gives you the depth in fathoms, refer to the conversion formulas in the Appendices. (1fm = 1.82m) If you have to convert fm to m, make sure to include this in the Comments section of the form.

Target Species Code: Enter the three-digit code from the Species Code List.

Name: In the box labeled Name, print the English or common name of the target species. Use the names from the Species Code List.

Bait Code: Enter the two-digit code from the list to indicate which bait was used on this set. Small squid (code 02) are 4-7" long calamari sized squid. If the bait code is 05. Mixed, or 06. Other; describe in the Comment section, what the bait was, and approximate amounts or percentages.

Examples: - *Mixed bait, 60/40 sanma-sardines*
- *9 cases sanma, 1 case sm. squid.*

Light Devices Block

Type Code: Enter the two-digit code representing the type of light device, if any, attached to the gear to help catch fish. This does not cover strobes or other lights attached to floats or radio buoys. These lights are used to help locate the gear if the mainline parts. If use code 03, *Other*, describe with notes in the Comments section. If use code 00, *None,* leave the *No. Devices* and *Color Code* elements blank. Some vessels use small glow-in-the dark plastic wedges near the hook on the branch lines to help hold the wire leader loop open. These are not considered light devices and should not be counted as such.

Number of Devices: Record the number of light devices deployed on this set.

Color Code: Record the color light the devices emit. If use code 08, *Mixed*, describe the colors used and approximate percentages on the Comments section of the form.

Mainline Block

Material Code: Select the appropriate code. If the code is 3 (Other), describe the material with notes, and collect a short sample if possible. If the mainline is constructed of 2 or more different materials, record the material code of the majority code in the space provided on the form. Record the other mainline materials (write the names of the materials & the codes) in the comment section of the form.

Diameter: Record the diameter of the mainline to the nearest tenth of a millimeter (0.1mm). Use vernier calipers for this measurement. If the mainline is constructed of 2 or more different materials with different diameters, record the diameter of the longest length of mainline in the space provided on the form. Record the other mainline diameters (write the names of the materials & the codes) in the comment section of the form.

-*Example:* A vessel has a mainline composed of 2 different types of monofilament line of two different diameters. One piece is 25 miles long and 3.6mm in diameter. The second is 7 miles long and 4.1mm in diameter. In this case you would record the data on the 25 mile piece on the front of the form, and the information on the shorter 7 mile piece in the comment section.

Reported Length: Record the length of mainline actually deployed on this set. Ask the vessel operator for this value. Do not use the GPS plotter or latitude/longitude coordinates to figure out distance between the two ends of the set.

-*Example:* A vessel has 60 miles of mainline on its reel. The captain says he'll set 45 miles. You would record 45 miles as the Reported Length.

Reported Test: The test strength of the mainline material in lbs. Ask the captain or try to determine this from the package. If the mainline is constructed of 2 or more different materials with different strengths, record the strength (Reported Test) of the longest length of

mainline in the space provided on the form. Record the other mainline strengths (write the names of the materials, the codes and the strength) in the comment section of the form.

Number of Strands: Record the number of strands of material the mainline is woven, or braided from. Occasionally a vessel may have several long pieces of mainline tied together. Do not count these pieces to find the number of strands.

Color: Select the appropriate code indicating the color of the mainline. If the code is 9. Other, describe in the Comments section of the form. If the mainline is constructed of different materials of different colors, record the color code of the majority of material in the space provided on the front of the form. Record the color of the other mainline materials in the comments section of the form.

Float line Block

Select examples of typical float lines used on this set. If the floatlines are constructed of 2 or more different materials, record the materials used (write the names of the materials & the codes) in the comment section of the form. There can be some variation. For the measured data elements (length & diameter), measure three typical float lines and take the average.

Material Code: Select the appropriate code. If there are more than 2 materials, select the material code of the majority of the materials. If the material code is 03. Other; describe the material with notes, and collect a short sample if possible. Record all materials used to construct the float line (write the names of the materials & the codes) in the comment section of the form.

Diameter: Record the diameter of the floatline to the nearest tenth of a millimeter (0.1mm). Use vernier calipers for this measurement. If the floatline is constructed of 2 or more different materials with different diameters, record the diameter of the longest length of floatline in the space provided on the form. Record the other floatline diameters (write the names of the materials & the codes) in the comment section of the form.

-*Example:* A vessel is using floatlines composed of 2 different types of materials with different diameters. One section is 18.2m long and 2.0 mm in diameter. The second is 2.2m long and 2.9mm in diameter. In this case you would record the diameter of the 18.2m section on the front of the form, and the information on the shorter 2.2m portion of the floatline in the comments section.

Measured Length: Record the length of the float line to the nearest tenth of a meter. Measure the line from end to end without a float attached to it. If the float line is constructed of 2 or more materials; measure all of the materials together as a single length. Use the 2m calipers.

Branch Line Block

Select examples of typical branchlines used on this set. If each branchline is constructed of 2 or more types of materials, record the materials (write the names of the materials & the codes) in the comment section of the form. Some variation in the construction of branchlines can be expected. For the measured data elements (length & diameter),measure three typical branchlines and take the average.

Material Code: Select the appropriate code. If there are more than 2 materials, select the material code of the majority of the materials. If the material code is 3. Other; describe the material in the comments section of the form, and collect a short sample if possible. Record information on the others materials used to construct the branch line (write the names of the materials & the codes) in the comment section of the form.

> -*example:* if a branch line was made of 4.5m of multi-filament line, and 0.5m of monofilament; you would enter the code of multi-filament on the form. The names and codes for multi-filament & monofilament would be recorded in the comments section.

Diameter: Record the diameter of the branch line to the nearest tenth of a millimeter (0.1mm). Use Vernier calipers for this measurement. If the branch line is constructed of 2 or more materials, record the diameter of the majority material in the space provided on the front of the form. Record the diameters of all other branch line materials in the comments section.

Measured Length: Record the length of the branch line to the nearest tenth of a meter (0.1m). Measure the line from the top of the snap to the leader. If there is a weighted swivel (weight) between the branch line and the leader; measure to the "hook side" of the weight. If the branch line is constructed of 2 or more materials; measure all of the materials together as a single length. Use the 2m calipers to obtain this measurement.

Color: Select the appropriate code indicating the color of the branch line. If the color code is 9 (Other); describe with notes and collect a small sample of possible. If the branch line is constructed of different materials of different colors, record the color code of the majority of material in the space provided on the front of the form. Record the color of the other materials used to construct the branch line in the comments section of the form.

Reported Test: The breaking strength of the branch line in pounds. Ask the captain or try to determine this from the package. If the branch line is constructed of different materials, record the Reported Test of the majority material in the space provided on the front of the form. Record the Reported Test of the other branch line materials in the comments section of the form.

Leader Material Block

Select examples of typical leaders. If the leaders used are of different materials, record the materials used (write the names of the materials & the codes) on the Comment Log. There can be expected to be some variation. For the measured data elements, measure three typical leaders and take the average.

Material Code: Select the appropriate code. If the material code is 3. Other; describe the material in the Comments section of the form, and collect a short sample if possible.

Diameter: Record the diameter of the leader to the nearest tenth of a millimeter. Use Vernier calipers for this measurement.

Measured Length: Record the length of the leader to the nearest tenth of a meter. Measure from the eye of the hook to end of the leader, usually to the weight.

Reported Test: The breaking strength of the leader material in lbs. Ask the captain or try to determine this form the package.

Weight Size: Record the predominant size of the weights used, in grams. If weights of different size are used, describe the weights used in the Comments section of the form.

Chapter 7 Protected Species Event Log

Introduction

The **P**rotected **S**pecies **E**vent **L**og is for observers to collect data describing the nature and numbers of protected species observed in association with longline fishing operations. This form provides a means to record data from the three main types of events. They are Approaches, Contacts and Sightings.

For Approaches and Contacts, only use this form when you physically see the event occur (*e.g.* a sea turtle becoming hooked or entangled, or a bird diving on the bait). Sightings can be either by the observer, vessel crew or both.

Approaches: Events where the marine mammals or sea turtles are observed coming closer to the vessel or gear from its initial observation. This does not include sea birds.

Contact: Events where the animal is observed to come into contact with the gear. Contact with bait or catch that is on a hook is considered as a gear contact. Animals observed becoming hooked or entangled in the gear are considered "catch-contacts" and are counted as "contacts" on this form. Data from these "caught" (catch-contact) animals would then be completed on the Catch Log. If you have a turtle come up on a hook but you did not actually observe it getting hooked then you do not record this on the PSEL; it will be recorded on the catch event log and other pertinent forms.

Behaviors (incl. sightings): Descriptions of marine mammal or sea turtle activity that do not involve contact with the fishing gear.

Special Notice for Short-tailed Albatross Observations

Short-tailed Albatross observations are a high priority.
RECORD ALL SHORT-TAIL SIGHTINGS
NO MATTER WHEN YOU SEE ONE!
If you see one, try to get a photo IMMEDIATELY!

General Instructions

Observations of protected species can be separated into a series of steps based on changes in the behavior or condition of the animal(s). A single event, like an observed hooking could include such steps as:

1. The initial observation & approach (APPROACH).
2. The observed arrival & investigation (BEHAVIOR).
3. The observed contact with the fishing gear (CONTACT).

All steps would have the **same overall Event Number**, but each step would have a different Event Type Code.

Incidents that are clearly separated by relatively long periods of time should be considered separate events.

This form allows observers to record information from a group of animals or a single individual. A group is defined as an association of animals behaving in a similar or unified manner. Groups may contain several different species of animals engaged in similar behaviors such as a mixed pod of dolphin species traveling as a cohesive group in the same direction.

When the observed behavior of the animal significantly changes, fill out a new line of data. Significant changes include things like changes in overall direction and speed of the animal(s), distance from the vessel or gear, a group splits up, several individuals form a group, or when an animal comes into contact with the gear or catch.

Defining an event can be very subjective at times, especially if animals are moving between groups or groups are splitting and fusing.

Sightings: Sightings simply mean you saw a species of animal at a certain place and at a certain time. The term sightings also implies that the animals (i.e. seabirds) were not observed in contact with the gear, attempting to steal bait off hooks or preying upon caught fish.

Interactions: Interactions are a specific type of sighting. An interaction means an animal was observed making contact with the fishing gear.

►►►Bait on a hook is considered as part of the fishing gear. Bait that has been removed or fallen from a hook is NOT classified as fishing gear.

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Special Notice for Recording Seabird Sighting Data

(These instructions do not cover sea turtle or marine mammal sightings)

During the Set

Seabird Sightings During the Set:

During setting operations, you will observe for seabird interactions for one hour (1 hr) immediately after the start of the set. Do two scan counts during the hour. Do the first scan count at the beginning of the set and the second at 30 minutes into the set.*

Record the same information that is required for the haul.

Seabird Interactions During the Set:
All incidents of seabirds observed making contact (incl. becoming hooked or entangled) with the gear should be recorded on the PSEL as completely and as soon as possible. It may be difficult to determine the exact number of birds involved in an interaction. Try to determine as best you can given the local conditions, an estimate of the numbers of individuals involved in any observed interaction.

Observed incidents of seabirds making obvious attempts (*i.e.* unsuccessful dives on baited hooks) should be recorded on the PSEL as completely as possible. It may be difficult to determine the exact number of birds making attempts. Try to determine as best you can, given the local conditions, an estimate of the numbers of individuals making attempts.

During the setting of the longline, seabirds that are observed injured (hooked or entangled) or killed should be recorded on the PSEL.

Obtaining accurate counts of seabirds involved in interactions with fishing gear may present difficulties to field workers. The NMFS and USFWS are aware of the realities of the situation. The presence or absence of interactions is very important in assessing the efficacy of seabird bycatch mitigation techniques. Even imprecise estimates of the numbers of individuals are useful when documenting the frequency at which seabird interactions occur and any associated time & location factors.

Under ideal circumstances, even experienced field workers attempting to accurately quantify seabird numbers during fishing operations would be hard pressed to capture data as precisely as one might desire.

●●

At times, you may only be able to get the lat/lon coordinates from the GPS receiver after the interaction is over. It is acceptable to record the lat/lon coordinates at the next possible opportunity that does not jeopardize your other duties. When there has been a period of several minutes between the time of the interaction and when you were able to record the lat/lon coordinates, make a note of when you were finally able to record the coordinates in the comments section of the form.

During the setting of the longline, record protected species that are observed injured (hooked or entangled) or killed on this form.

During longline retrieval, when a protected species is observed becoming hooked or entangled; record the steps up to the hooking/entanglement on a Protected Species Event Log and then the information (re: float & hook nos., and condition information) about the catch/entanglement on the Catch Log and the appropriate biological data form.

Note: If you **did not actually observe** the animal <u>becoming</u> hooked or entangled during gear retrieval, **do not record the information** on this form. In these cases, the data would be entered on the Catch Record and the appropriate biological data form.

During the Haul

Seabird Sightings During the Haul:
During haul back operations, record seabird sightings by doing a "Scan Count". You will do a Scan Count for five minutes once an hour, at the top of the hour after the haul has started. For example, if a haul starts at 7:55am, you would do your first Scan Count for that haul at 8:00am until 8:05am. If the haul started at 8:10am, you would do your first Scan Count for that haul at 9:00am. If for some reason you do not start the scan right at the top of the hour record the exact time that you start and Scan for five minutes.

A Scan Count is performed by doing a 360º look around the vessel from your observation post to determine the species and number of seabirds. Do not spend more than five minutes scanning for seabirds.
After you've done a scan count for seabirds, you only need to record the following data elements on the PSEL. Do not record positions for scans.

Data for the Scan Counts:

Page No.
Event No.
Date and the start time
Event Type Code (S)
Activity of the vessel
Set No.
Weather code
The species observed and their numbers

If multiple species are observed during the same scan period **each species is recorded on its own line**. All data elements listed above, except date and time, must be filled in for every species observed. The event numbers will be the same for the same scan period. The associations must be filled in if there is more then one line for a scan.

If no birds are seen during a scan count, you still need to record the data. Leave the species code blank. The number of birds will be recorded as "zero" (0). If you see birds after you've completed a scan count, even 1 minute later, do not record them as being observed during the scan count. They weren't there when you did the scan count.

Seabird Interactions During the Haul:
All incidents of seabirds observed making contact (incl. becoming hooked or entangled) with the gear should be recorded on the PSEL as completely and as soon as possible.

Observed incidents of seabirds making obvious attempts (*i.e.* unsuccessful dives on baited hooks or captured fish) should be recorded on the PSEL as completely as possible.

Data Elements

Observer ID: In the upper left corner of the form, fill in the spaces with the Observer ID number assigned to you during training.

Trip Number: The unique six-digit number assigned by the Operations Coordinator. In the first two blocks, record **LL** for longline. After the second block, enter the four digit sequential number of the trip.

Protected Species Event Log Page No.: Begin with page 01 and number them consecutively throughout the trip.

Page Number: Enter the page number, as on this Protected Species Page No., for every line that contains data. You may enter the page number on the first line and then draw an arrow down to the last line.

Line Number: This element should be pre-filled.

Event Number: Enter a sequential number for each separate event recorded throughout the trip. The first event observed is numbered 01.

Date/Time: The date and time the event occurred. Use the standard date and time formats (e.g., 24 JUL 2003).

Group/Individual ID: A number to designate the group or individual. If a group splits apart, each sub-group would then be entered onto its own line with a different Group/Indiv. ID. This should **not** be filled in for Scan events.

Event Type Code: Enter the letter code that describes the type of event.

Event Type Code List

B = Behavior
A = Approach.
C = Contact.
S = Scan (scan count)
X = Event ended

B = Behavior is used to signify that the data on that line describes an animal(s) exhibiting a specific pre-defined behavior from the Behavior Code List.

A = Approach is used to signify that the data on that line describes an animal(s) that when first observed was moving towards the vessel or gear. For example; if you see a dolphin bow riding, but did not see it approach the vessel, you would not use A for the Event Type Code. If you did see the dolphin approach the vessel, and then bow ride, you would use A for the Event Type Code for the line describing the approach, and B for the Event Type Code for the line that described the behavior.

C = Contact is used to signify that the data on that line describes an animal(s) that was observed making contact with the gear. Contact includes hooking, entanglements and simple contacts that do not result in a hooking or entanglement. This Event Type code should only be used if you saw the animal make contact. Animals that are seen only after being hooked or entangled should not be recorded on this form.

S = Scan or Scan Count is used to signify that the data on that line(s) describes seabirds that were sighted during a specifically scheduled observation period. The S Event Type code should not be used to describe seabirds observed attempting to prey on baited hooks, preying on baited hooks or caught fish. S should not be used as the Event Type Code when recording sightings of marine mammals or sea turtles. S is the only event type that should not have an end event X.

X = Event ended. This code is used to signify that an event is completed or your observations of the situation ceased. Every event, except for Scans, will end with an *Event Type Code* of X. After entering X in the Event Type Code Box, no additional information is required for the line except the association codes.

Vessel Activity Code: Record the activity of the vessel at the time of sighting:

Vessel Activity Code List

01 = Gear Retrieval.
02 = Gear Set.
03 = Gear Drift/Soak. Use only if gear is in the water after setting operations are completed and hauling or retrieval operations have not started.
04 = Pre-Set Prep. Crew is preparing the vessel and gear for setting operations.
05 = Post Haul Clean-up. Crew are cleaning up and reorganizing the fishing gear after the last piece of gear is on board.
06 = Running / traveling while the gear is onboard the vessel
07 = Other

Set Number: Record the set number if the vessel activity is setting, soaking, or retrieving. Sets are numbered consecutively for each observed trip beginning with 01. This number should be the same as on the Set & Haul Data form for this set.

Sighting Method: Enter the code that indicates the method by which you first became aware of the event.

Sighting Method Code List

00 = Undetermined. (for legacy & historical data considerations)
01 = Naked eye.
02 = Binoculars.
03 = First sighted by captain/crew, then by observer.
04 = Sighted by captain/crew only.
09 = Other.

Latitude & Longitude: Record the vessel's lat/lon coordinates from the GPS receiver or plotter at the time of the sighting. Record the minutes to the nearest tenth (only one place behind the decimal point; for example: 15°45**.3** N or 153°19**.1** W). If you are unable to obtain the coordinates right away, record them as soon as you are able.

You may encounter a situation where there are many changes in behavior in a short period of time. In a case like this, record the initial position and leave the coordinates in the following lines blank.

Direction N/S: Indicate the hemisphere of the latitude. North = **N**, South = **S**.

Direction E/W: Indicate the hemisphere of the longitude. East = **E**, West = **W**.

Weather Code: Enter the appropriate code that describes the weather.

English Name: Enter an abbreviated common name of the species. There is a list of the common species encountered on the bottom of the form.

Species Code: Enter the 2 or 3 letter code indicating the species code from the Species Code list in the Appendices.

Behavior Code: Indicate the activity of the animal(s).

Behavior Code List

01 = Contact. The animal was observed making contact with any part of the gear (incl. hooked bait). Animals observed becoming hooked or entangled get this code and are also recorded onto the Catch Log. Observations of bait or caught fish in the animal's mouth / beak can be accepted as evidence of contact, provided the same material (*i.e.* offal, spent bait) was not observed already present in the immediate vicinity of the animal.

02 = Attempt, no contact. An observed unsuccessful attempt to steal / feed on hooked bait or catch. No observed contact with the gear. The animal(s) were observed making direct close approaches / dives at the gear

or hooked catch, and were neither observed making contact nor showing evidence of making contact.

03 = Near gear (or vessel), within 50m.

04 = Distance, 51 to 150m.

05 = Feeding on catch. The animal(s) were observed preying on hooked catch. Animal(s) observed in the immediate vicinity of the gear / vessel during hauling operations and catch showing fresh signs of damage or predation typical of the species observed, are evidence of *Feeding on Catch* and should receive this behavior code.

06 = Porpoising - splashing along the surface, breaking the surface regularly, large portions of the body visible.

07 = Bow riding: animal(s) are observed keeping pace with the vessel in front of the bow wave.

08 = Breaching: jumping out of the water and crashing down on flank, back or belly.

09 = Swimming at surface, not porpoising.

10 = Milling: the animal(s) are resting at the surface and are moving about very slowly. Do not appear agitated or excited.

11 = Motionless: the animals are observed floating at the surface and not moving.

12 = Avoidance: the animal(s) suddenly change behavior or direction of movement to avoid the vessel.

13 = Vessel attraction: the animal(s) suddenly change behavior or direction of movement and approach closer to the vessel than the initial sighting distance.

99 = Other: the animal(s) were observed exhibiting a behavior not described in the above available choices. Please describe the behavior(s) on the back of the form in the comment section.

Condition Code - Select the code that represents the state of the animal at the end of the phase you are recording on the line. There can be one condition code per line. A change in the condition necessitates a new line.

Condition Code List

02 = Alive, not injured: The animal(s) of this species involved in this event that are alive & uninjured.

03 = Injured: The animal(s) of this species that are injured at the end of this event. The **Behavior code** of injured animals must be 01.

04 = Killed. The animal(s) of this species that are clearly dead at the end of this event, when the interaction does not occur during gear retrieval.

05 = Dead, fresh: The animal was dead when first observed, and appears not to have died as a result of fishing operations. The *Behavior code* of dead animals can only be 03, 04, 11, or 99.

06 = Decomposed. The animal was dead and exhibiting signs of decay when first observed.

Species Count Block

Often you will observe a large number of animals, such as a mixed species flock of albatross or a large pod of dolphins. In these cases it may be difficult to accurately determine the number of individuals in the group(s). If you are confident that you were able to obtain an accurate count of individuals, like a small group of 1 to 6 individuals; you can enter the same number for the High, Low and Best estimates. For example if you observed a single Black-footed albatross, the High, Low & Best estimates would all be 1. Similarly, if you saw two False killer whales for a period of time and only observed evidence that there were two, then the species count estimates would be recorded as 2, 2, and 2.

Low Estimate: Record your low estimate of the number of individuals of this species present. Use leading zeros if entering a single digit. For Scan Counts, enter a zero "0" if no seabirds are seen.

Best Estimate: Record your best estimate of the number of individuals of this species presents. This number does not have to be the mathematical average or mean between the high & low estimates. Use leading zeros if entering a single digit. For Scan Counts, enter a zero "0" if no seabirds are seen.

High Estimate: Record your high estimate of the number of individuals of this species present. Use leading zeros if entering a single digit. For Scan Counts, enter a zero "0" if no seabirds are seen.

Sketch: Place a check mark or X in the box if you drew a sketch of the animal(s) or incident.

Photo: Place a check mark or X in the box if you took a photo of the animal(s). Make sure to record the details on your photo log.

Comment: Place a check mark or X in the box if there are comments/notes.

Association Code Block

The elements in this section indicate which other forms may relate to this event. For example, after an animal is observed becoming hooked, the form code CL element will indicate that the capture information is in the Catch Log. If the event on this line follows a previous line, the form code PS indicates that there is another preceding event on this form.

Form Code: A two-letter abbreviation of each form title. It can be found in the lower right corner of each form.

Page Number, Line Number: The page and line number of the form that contains the related information to this event.

Chapter 8 Seabird Mitigation Techniques

Introduction

The **S**eabird **M**itigation **T**echniques form is used to record the mitigation techniques employed by the vessel during setting and retrieval operations.

General Instructions

The mitigation techniques are recorded both during the set and the haul of the longline gear. Observers are required to observe at least the beginning of the set and the entire gear retrieval.

Data Elements

During Set Block

Deterrents Used: Place a checkmark or X in the appropriate box for each deterrent used during the setting of the longline gear.

Number of Floats Observed: Record the number of floats you watched set out during the setting of the longline gear. If set is made during daylight hours, try to observe a minimum of 10% of the floats. Use leading zeros as necessary.

Night Setting: The **Begin Set** time is **at least <u>one hour after</u> the setting of the sun**, and the set must have been completed at least one hour before sunrise. Use your issued GPS to figure out the time of local sunset. Do this by pressing menu-celestial-sun and moon.

Towed Buoy: A buoy or other floating object towed behind the vessel where baited hooks are deployed during the observed portion of the set.

Tori Line: A line approximately **150m** with intermittent swivels and streamers towed behind the vessel that covers the area where baited hooks are deployed during the observed portion of the setting of the longline gear. Note in the comments if the line did not completely cover the gear.

Line Shooter Used: A mechanical line setting device (line shooter) was used to deploy the mainline during the observed portion of the set.

Water Spray: During the observed portion of the set, water was sprayed on the sea surface on, near, or behind the area where the fishing gear was entering the water.

Deflate Swimbladder: During the observed portion of the setting of the gear, the swimbladders of fish used for bait were punctured or deflated. **Note:** Squid do not have swimbladders, therefore, if squid are used as bait, this deterrent cannot be used.

Blue-dyed Bait: During the observed portion of the setting of the longline gear, the bait was dyed blue. The blue color must be at least the same intensity as the NMFS blue color standard for bait. If the blue does not match the NMFS color standard, leave this box blank.

Weighted Branch Line: Weighted branch lines are used during the observed portion of the setting of the longline gear.

Strategic Offal Discard: Did vessel personnel discard offal (fish parts, excluding bait, not intended for human consumption) in a manner that attracts seabirds away from the longline gear during the observed portion of the set. If so, mark this box. **Note:** Use of this deterrent is not possible while deploying the gear for the first set of a trip or when no birds are present.

*****If spent bait is retained during the haul and strategically discarded during the following set, check the *Other* deterrents box. Make sure to describe the situation in the comments section.

Bait Thawed: During the observed portion of the setting of the longline gear, the bait was completely thawed.

Set Underwater: During the observed portion of the set, was the gear deployed with an underwater setting chute?

Bait Set Outside Wake: During the observed portion of the set, the baits were thrown outside the vessel's wake.

Gear Set from Side: The longline gear was deployed from the side of the vessel. Some vessels may have the line shooter on one side or corner of the stern. That is not considered side setting.

Other: During the observed portion of the set, the vessel crew did something specifically to reduce seabird bycatch that is not included elsewhere in this list.

During Set Comments: Describe any other bird deterrent(s) used during the set. Describe any deterrent(s) used, but not properly deployed.

During Haul

Deterrents Used: Place a checkmark or X in the appropriate box for each deterrent used during the hauling of the longline gear.

Night Hauling: The **Begin Pull** time is **at least one hour after the setting of the sun**. If the end of the pull was not completed at least one hour before sunrise note this in the

comments. Use your issued GPS to figure out the time of local sunset. Do this by pressing menu-celestial-sun and moon.

Towed Buoy: A buoy or other floating object towed behind the vessel where baited hooks are present during the hauling of the longline gear.

Tori Line: A line approximately **150m** with intermittent swivels and streamers deployed so that it covers the area where baited hooks are retrieved during the hauling of the longline gear. Note in the comments if the line did not completely cover the gear.

Water Spray: During the observed portion of the haul, water was sprayed on the sea surface on or near the area where the fishing gear was exiting the water.

Blue-dyed Bait: During the hauling of the longline gear, the bait was dyed blue. Properly dyed bait will be faded, but a light blue color will still be evident. If more than a few baits appear undyed or several undyed baits are on consecutive hooks (i.e. one or more baskets), do not check this box. Document the details in the Comment section.

Weighted Branchline: During the haulback, most of the branchlines observed had weights attached. If more than a few branchlines did not have weights on them or several consecutive unweighted branchlines were observed, leave this blank and describe the situation in the Comment section on the form.

Strategic Offal Discard: Did the vessel personnel discard offal (fish parts not intended for human consumption) off the stern or opposite side of the vessel from where the longline gear is hauled aboard during the haul when there are birds present?

Strategic Bait Discard: Did the vessel personnel discard spent bait off the stern or opposite side of the vessel from where the longline gear is hauled aboard when there were birds pesent? If so, mark this box and describe the bait discard in the Comment section. <u>If the spent bait is retained on board, leave this blank. If the spent bait is thrown over board on the same side as the gear is hauled aboard, leave blank.</u>

Other: During the observed portion of the haul, the vessel crew did something specifically to reduce seabird bycatch that is not included elsewhere in this list.

During Haul Comments: Describe any other bird deterrent(s) used during the haul. Describe any deterrent(s) used, but not properly deployed or performed.

Don't forget to list the estimated number of seabirds observed during hauling operations on the Protected Species Event Log.

Chapter 9 Catch Event Log

Introduction

The **C**atch **E**vent **L**og form is a record of the total number of fish and protected species (sea turtles, seabirds, marine mammals) **captured** during a set and their condition, disposition and measurements. Captured may include non-hooked fish such as remoras. The data are used to determine catch rates for target and non-target species in the fishery.

General Instructions

Record each fish in the order it is caught. Use the common English names from the Species Code list for the species of fish caught. Each fish should be listed individually. The higher priority elements within a line are to the left. Species composition and location (species name & float/hook no.) data are more important than condition data, which are more important than measurements. The check boxes at the end of each line are an exception.

When crewmembers are preparing to cut or unsnap a leader before the entire dropper line is brought to the surface, ask to see what species, if any, is on the line before it is cut or unsnapped. This request needs to be made each time a leader is going to be cut whenever the catch is not visible. If your request is denied, document each incident in the Interference Section of your Documentation Notebook.

****Do not record unknown objects (or animals) on this form**. If there is an unknown object on the line (*i.e.* something that came off the hook/line before you could determine what it was) describe the situation in the Comments section of the form. When recording information on *unknowns*, make sure to record the float & hook number. During data entry, comments on *unknowns* will be entered on the Set & Haul entry screen. Record squid or other invertebrates that come up hooked or entangled in the Comments section too.

SPECIAL NOTE FOR OBSERVING ALBATROSS AT OR ABOVE 23ºN LATITUDE

If observing a set that had any gear deployed (in the sea) at 23ºN or above **AND** albatross are present, record their sightings only during Scan counts, unless it is a short-tailed albatross which always gets recorded regardless of activity**.** If the albatross are interacting (coming into contact with hooked bait or catch) then that needs to be recorded at any time during the haul. During this time you must keep track of what is coming up on the hooks and record everything caught on the data forms but it is ok if you do not get all of your measurements. If a sea turtle is caught when observing albatross at or above 23ºN, the sea turtle will become the priority.

****If a fish (including sharks) is brought on board the vessel, but you are unable to take any measurements, record the approximate length.** Do not measure fish with missing tails or those that have broken or damaged spinal columns.

Record the **approximate length** of fish that come out of the water and fall off or are accidentally knocked off the hook by the fisherman. Observers should ask that, if possible, all dead fish be brought on board to measure.

Some vessel crews do not want to injure small tunas by bringing them aboard. If they are doing this, ask them to bring aboard the fish so you can measure them quickly before returning the fish to the sea.

Data Elements

Observer ID: In the upper left corner of the form, fill in the spaces with the Observer ID number assigned to you during training.

Trip Number: The unique six-digit number assigned by the Operations Coordinator. In the first two blocks, record **LL** for longline. After the second block, enter the four digit sequential number.

Set Number: Sets are numbered consecutively for each observed trip beginning with 01.

Catch Page Number: Number the first page of each set 01. This means that the first page you start with each day should be 01; do not number pages consecutively throughout the trip.

Haul Date: Record the **day of the haul**. Note: The date of the set may be the day previous to hauling back the gear, and not the day the catch is tallied. Use the standard date format.

Page Number: Number the first page of each set 01. This means that the first page you start with each day should be 01; do not number pages consecutively throughout the trip. It is acceptable to record the page number on the first line and draw an arrow down the column.

Line Number: These are already filled in and cannot be changed.

Species English Name: Record the English common name of the species caught. At the lower left, is a list of commonly encountered fish with their species codes. If you run out of lines, continue recording the data on another Longline Catch Log. If you run into a situation where there are numerous fish of the same species being pulled up one after the other it is acceptable to write the name of the species on one line and then draw an arrow down to all subsequent lines.

Species Code: Enter the three-digit species code from the Species Code list for all fish. Note: There are separate codes for *unidentified types of animals* and *other identified* animals. Other identified means you were able to identify the animal, but the species doesn't have a species code assigned to it. **Do not** draw arrows down for the same species codes.

Float Number: For each fish record the sequential float number, along the mainline, associated with the hook number. (Float number one is the first float brought aboard in the retrieval process). Should the line part, continue to record float numbers sequentially. If the line parts at float 50 and the vessel motors to the end radio buoy to haul the gear; that radio buoy is counted as float 51 and the other floats are counted sequentially for the rest of the haul. A brief description of the where the line was retrieved following a parting and the number of floats (or amount of gear) lost should be included in the Comments Log. The end position recorded would then be the position of the last float of the set to come aboard. ***REMORAS:** Many large billfish & sharks have remoras attached on them. Record each remora on a separate line, but DO NOT record a float or hook number**. Do not** draw arrows down for the same float numbers.

Hook Number: For each fish, record the sequential number of the hook after a float line. After each float comes aboard, start counting again from 1. ***REMORAS:** Many large billfish & sharks have remoras attached on them. Record each remora on a separate line, but DO NOT record a float or hook number. Occasionally two fish will come up on the same hook due to predation on the first fish that was hooked. Both fish should be recorded on separate lines with the same hook and float number. The fish that was caught first should have damage code of CO with comments. The second fish should have comments stating that it became hooked while feeding on catch. If it is not obvious predation still record both fish and describe the situation.

Caught Condition: Indicate the condition of the animal at capture with these codes.

> **Fish & Sharks: A** = Alive (active). **D** = Dead (or inactive). <u>If you are unable to determine whether or not a fish is alive, enter D.</u>
> *****Caught Condition codes ***I*** *&* ***U*** are reserved for protected species. They will not be accepted for fish or sharks.
>
> **Protected Species: A** = Alive, **D** = Dead, **I** = Injured, **U** = Unknown.

Kept/Returned: Indicate if a fish is kept or returned, and its condition at the time of return by entering the appropriate letter code from one of the following categories. Fish that are returned to the environment, non-marketable species (incl. non-marketable species retained by the observer) and fish that come off hooks should be marked with one of the return codes.

***A fish or shark retained by the observer as a specimen (identification purposes or a research request) should be marked as though it were returned *Dead*.**

K = Kept: Fish retained, in part or whole, by the fishermen for sale or personal consumption. Note: Sharks are considered *Kept* if any body parts (*i.e.* jaws, gall bladder, skin) other than the fins are retained. These parts are sometimes taken in addition to the fins.

A = Alive: For a fish or shark, a Return code of Alive indicates that the animal was active when it was returned to the sea. Thresher sharks are often "tail hooked." In this case, if the tip of the shark's tail is cut off to remove it from the hook; the shark should be marked with a Return Code of *Alive.*

For Protected Species a Return Code of Alive indicates that the animal swam or flew away from the gear with no visible injuries or deformations. However; protected species that are observed hooked before freeing themselves should be marked as *Injured*, even if you don't see any blood or wound.
They must have freed themselves from the gear through their own efforts. For example; an animal is observed lightly entangled, but swims free of the gear. Animals marked as returned *Alive* must have been recorded as *A* (alive) in the Caught Condition column.

D = Dead: Dead indicates the animal did not swim away after being returned. There may be no visible muscular activity. The animal may be stiff from rigor mortis or limp. Inactive fish and fish which you are unable to determine if they are alive or not, should be marked as returned *Dead*.

A fish or shark retained by an observer as a specimen (for identification purposes or a research request) should be marked as returned *Dead*. The vessel's crew would be assumed to have discarded the fish, and not retained it for sale or personal consumption.

I = Injured: (Only for protected species) Injured indicates the protected species was physically damaged as a result of becoming hooked or entangled in the longline gear. The injuries can be visible, like open wounds, or not visible, like bruising or internal bleeding. An animal with visible deformations of the body or body parts is considered *Injured*. An animal that flies or swims in an abnormal manner after being released, should be marked as *Injured*.

All hooked animals are considered *Injured*, no matter the severity. Animals that are observed entangled and are unable to free themselves are considered as *Injured*. If they are disentangled or cut free by the crew or observer of the longline gear, the animal should be marked as *Injured*. Animals that are released with part(s) of the fishing gear attached to their bodies are considered *Injured*.

Describe all injuries of protected species with notes as fully as you can, in addition to recording the data elements required to complete the form. Take a photograph of the injury, if possible. Make sketches if necessary, to help describe the location of the injury. For the injury, make notes on the color, the shape, any bleeding or other discharge(s), missing body parts, any abnormal function, and the behavior animal after it was released.

F = Finned: This code is for sharks only. It means that the fins, and only the fins, were retained and that the rest of the shark's body was discarded. Sharks are marked as kept if any body parts (*i.e.* jaws, gall bladder, skin, body) other than the fins are retained. These

parts may be taken in addition to the fins. If a crew kept the fins and shark gall bladders, the sharks would be marked as *Kept.*

U = Unknown: The animal was returned to the sea, but the observer was unable to determine the condition of the animal, or the animal was returned to the sea in a condition other than above. This includes unobserved discards. Describe any unknown returns in the notes/comments section.

Damage: Record the appropriate code for any damage observed. Refer to the damage code list on the form. Use the code the "*ND*" (*No Damage*) if you looked and did not see any damage. If you could not tell if the fish was damaged (*i.e.,* the fish came off the hook or the line was cut, before you could observe any damage), record "*UO*" (*Un-Observed).* Do not consider damage caused by efforts to land the fish. Describe any damage not covered by one of the damage codes. Refer to Catch Log page and line number, as well as the fish's common name in the comments section of the form. It is acceptable to draw an arrow down if you have numerous fish with *No Damage,* code ND.

Sex: Indicate the sex of the specimen with an M or F. If the gender of the animal is unknown or undetermined, leave this blank. Refer to the following species group instructions for information on determining the sex of an individual fish.

Measurement Code: Enter the two letter code indicating which measurement(s) was taken. Different species groups have the following different measurements taken:

- **Billfish: EF** – eye to fork
- **Shark: FL** – fork length
  CI – clasper inner length
- **Tuna: FL** – fork length
- **Opah & Pomfrets: FL** – fork length

Sometimes you will be unable to measure a fish or shark because; the animal is not brought on board the vessel, it is too lively & dangerous to approach on the deck, or the animal is rendered un-measurable due to damage. In these cases make a visual estimate of the fork length in FEET. This is called an *Approximate Length*, and the code is AL

Approximate Length for Billfish - Eye to fork length: Estimated length in feet, from the posterior margin of the eye orbit to the fork in the tail.

Approximate Length for Sharks & Other fish - Fork length: Estimated length in feet, from the tip of upper snout to the fork in the tail. When estimating the fork length of a thresher shark; use half the total length (snout to tail tip) as the value for the AL.

Measurement: The dimension(s) of the animal as measured with the 2m calipers (or measuring tape for the clasper inner length of male sharks). Enter the length to the nearest whole centimeter. There are instructions and diagrams at the end of this section for clarification. You do not have to write *cm* in the box after the numbers.

In the case of an Approximate Length, write in the visual estimate you made of the fork length (FL) or eye-to-fork (EFL).

Tagged: Check or X this box to indicate that a tag was recaptured or applied on this animal. If no tags were recaptured or applied, then leave this blank.

Specimen: Check or X this box to indicate that a biological specimen was collected from this animal. This could include a whole animal (fish, turtle or bird). If a specimen was not collected from the animal, leave this blank.

Photo: Check or X the box if you took a photo of the animal.

Sketch: Check or X the box if you made a sketch on a Sketch Form of this animal. If you made a sketch of this animal on one of the Sketch ID forms required on your first couple of trips, do not check this box.

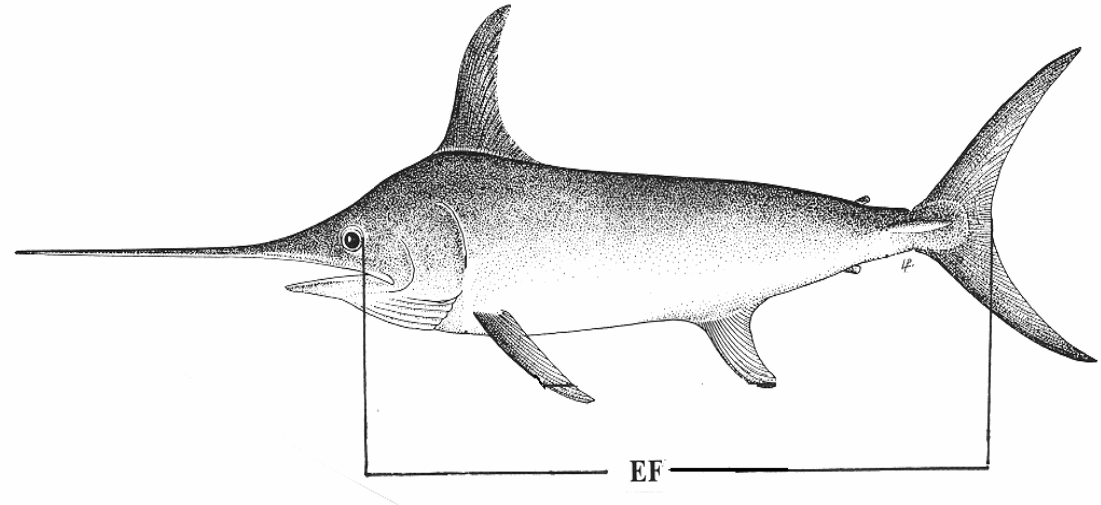
Comments: Check or X this box to indicate that notes exist describing damaged animals, animals with unknown disposition or other notes on the catch.

Fish Measurement Instructions

Record the length to the nearest centimeter. Measure the **left side** of the body, if possible. Accurate length measurements cannot be obtained from fish whose tails have been cut off, damaged or have a severed/damaged spinal column. If the fish is too damaged to accurately measure, record the appropriate Approximate Length.

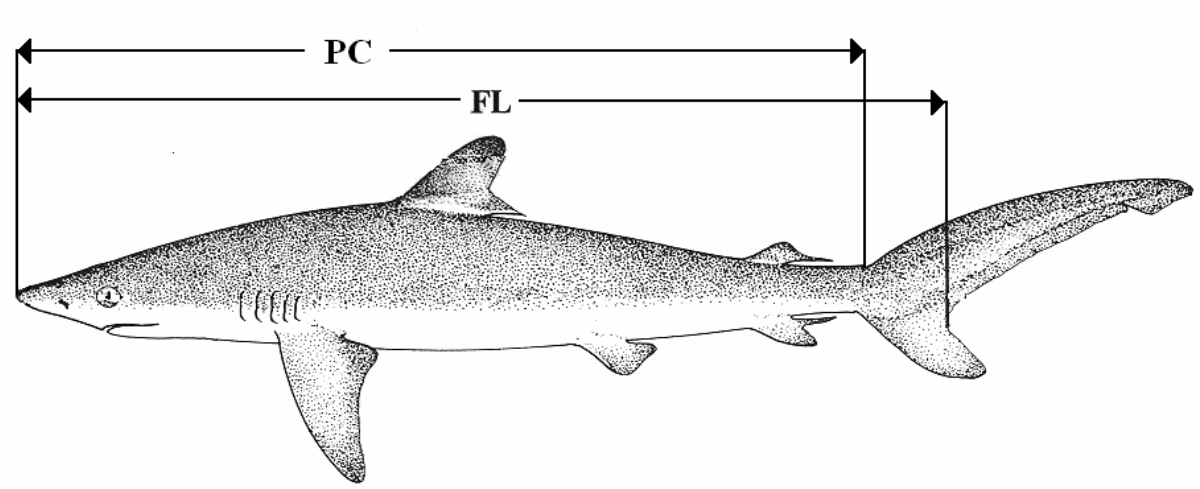
BILLFISH: (Marlins, Swordfish, Spearfish)

Eye to fork (EF): Measure from the posterior margin of **left eye** orbit to the inside of the fork in the tail. This measurement is taken with the 2m calipers.

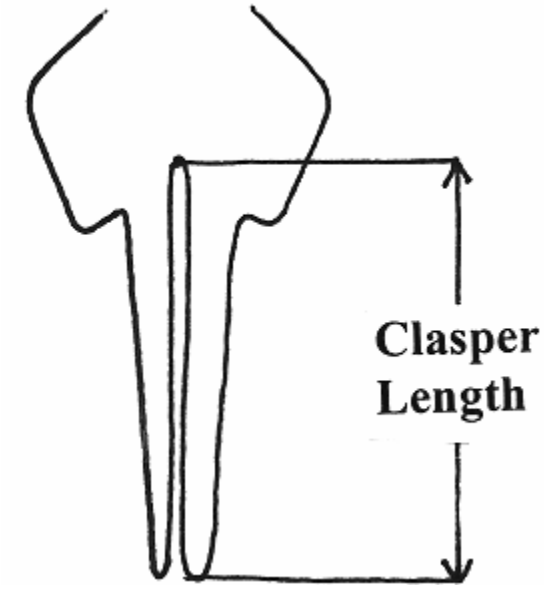


SHARKS

Fork length (FL): Measure from the tip of the snout to the center of the fork in the tail.
Pre-caudal length (PC): * Measure from the tip of the snout to the pre-caudal pit (small crease) at the end of the caudal penduncle. If the shark does not have a pre-caudal pit, use the point where the front edge of the upper tail lobe meets the caudal peduncle.

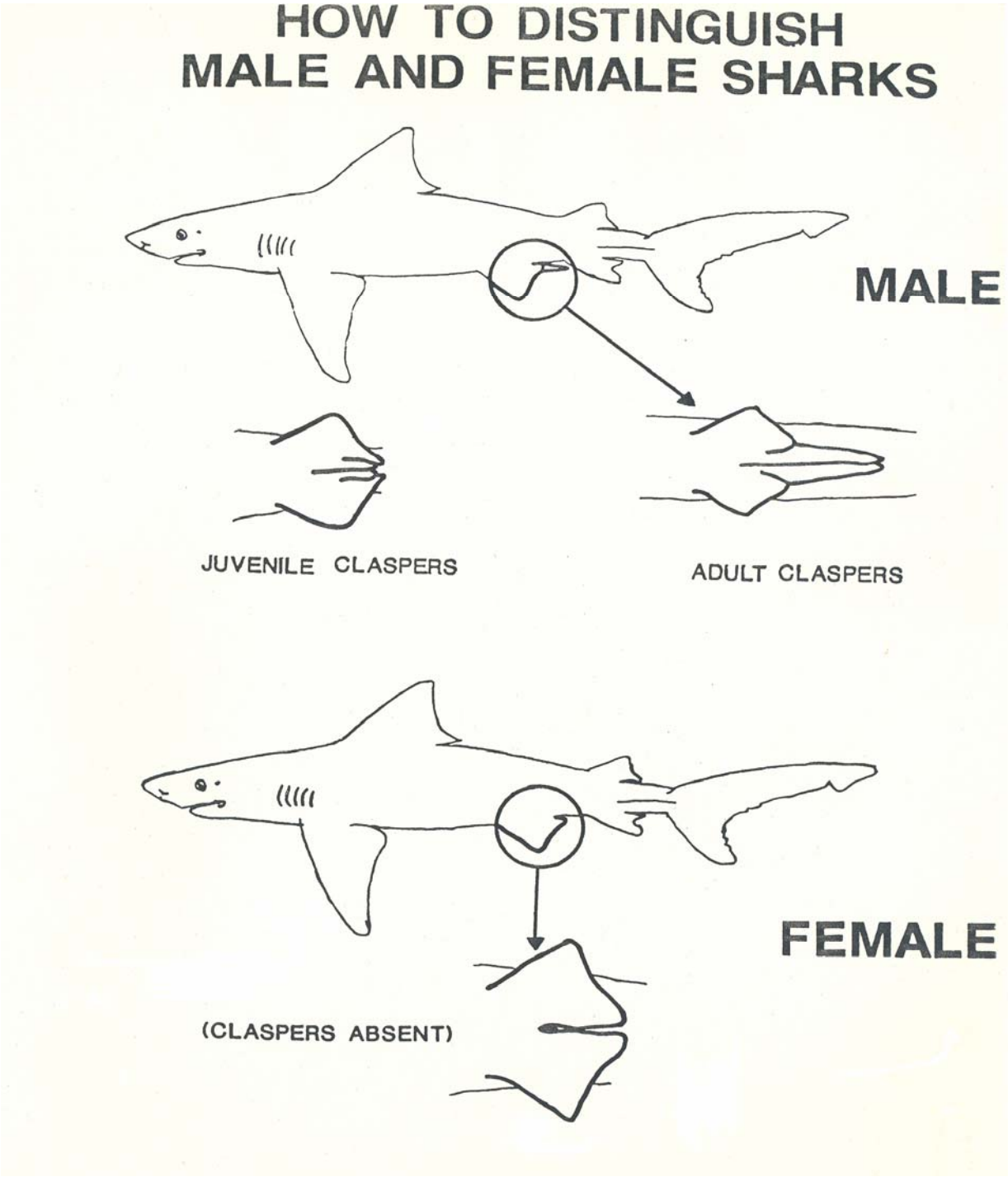


Clasper Inner Length (CI): For male sharks, measure from the tip of the clasper to the center of the angle between the claspers.



Shark Sexing Diagrams

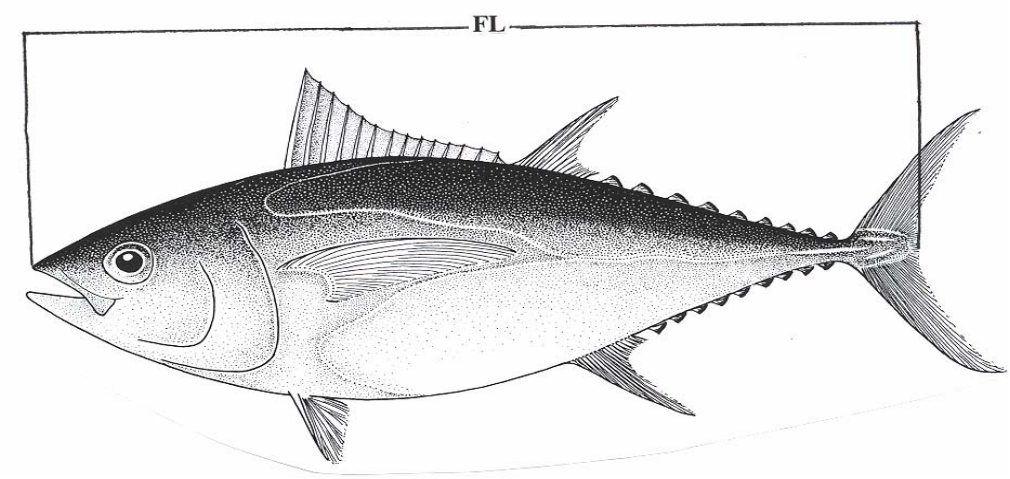
(Also works for rays.)



From Turtox *Key Card for Shark Dissection*, Boreal Laboratories © 1980

TUNAS, OPAH and POMFRETS

Fork length (FL): Measure from the tip of the snout to the inside of the fork in the tail. If an opah's mouth is open, close it to take the measurement.



TUNA SEXING:

Female: The ovaries are fusiform (spindle shaped) paired structures. They are suspended from the ventral surface of the gas bladder, which can be confused with the dorsal wall of the coelom (gut cavity), and are united at their posterior extremities, terminating just behind the anus. The ovaries are yellowish in color and circular in cross-section.

Male: The testes are compressed (somewhat flattened) lanceolate paired structures. The testes are white or light cream in color and flattened in cross-section.

Opah Sexing Diagram

Male:

Female:

**** Note the sharp angle and concave nature of the male chestplate and the more gentle slopping, convex nature of the female chestplate.***

Dolphinfish Sexing Diagram

Male:

Female:

**** Note the pronounced bony crest of the male forehead and the gentle slopping, convex nature of the female forehead.***

Chapter 10 Sea Turtle Biological Data

Introduction

The **S**ea **T**urtle **B**iological **D**ata form is used for recording biological data collected from sea turtles. These data will be used to determine the number, species, size and condition of sea turtles involved in the longline fishery in the central Pacific. Other data are recorded on the movements and preferred habitats of the various populations of sea turtles. These data are critical to the development of conservation and recovery strategies for these marine reptiles.

Remember:

Specimen collection and life history work are prioritized so if activity must be curtailed, the most important data and specimens have the highest probability of being collected.

The priorities of data & sample collection are as follows:

➢ Record sea turtle identifying characteristics, morphometric measurements, and tag data. Retain dead sea turtles after processing.

➢ Record seabird identifying characteristics and tag data. Retain dead seabirds after processing; leave any leg bands in place.

➢ Collect & record fish measurements.

General Instructions

Complete a Sea Turtle Biological Data form for every sea turtle observed caught (including entangled individuals). If a sea turtle is observed caught, but it is not landed, complete as much of the form as possible. For **unlanded** (are not brought on board) turtles you should complete at a minimum the following data elements:

1. Header information on the form.
2. Capture information block
3. Release information block.

If you are not sure of the number of scutes on the carapace, or you cannot take accurate measurements, leave the data field blank, or record it as unknown. **Take photographs of all captured turtles. Photograph sea turtles that are not brought aboard due to their large size when possible.**

With a little experience, sea turtles, when seen up close are generally easy to identify. Refer to the key at the end of this section for assistance.

Each sample is to be individually tagged and labeled. The label is to have the following information: specimen number, species of animal, and sample type, e.g., skin biopsy. The specimen number, is composed of the Trip, Set, Catch Log page no. and line number. If many samples are collected from the same animal and placed into a common plastic bag, ensure that each part is properly tagged and labeled. Label the plastic bag with a large tag clearly stating its contents.

Record tag data if tags are present when captured on a ***T**ag **D**ata* form. Photograph all sea turtles brought aboard; take a picture of the **dorsal**, **ventral**, and **frontal** views, as well as a photo showing the hook location in the turtle. (If the hook will be removed, take the photo before removing the hook.). If a satellite tag (PSAT) is attached to the turtle, take a picture of the carapace showing the satellite tag after attachment. Refer to the Data Collection Instructions section, page 11, for instructions and tips on taking photographs.

Data Elements

Observer ID: In the upper right corner of the form, fill in the spaces with the Observer ID number assigned to you during training.

Trip Number: The unique six-digit number assigned by the Operations Coordinator. In the first two blocks, record **LL** for longline. After the second block, enter the four digit sequential number.

Set Number: Record the set number from the Catch Event Log.

Species Code: Record the two-letter code from the Species Code list of the turtle captured.

Associated Log Forms: Place a checkmark or X in the box to indicate which additional log forms contain data associated with this turtle. If you mark a log form box, make sure to complete the information on the indicated log.

Catch Form Page Number: Record the page number from the appropriate Catch Event Log form.

Catch From Line Number: Record the line number from the Catch Event Log that contains information on the capture of this particular sea turtle.

Capture Information Block

Date of Capture: The date the turtle was caught. Use the standard date format (*e.g.* 24 JUL 2003).

Time of Capture : Record the time the turtle was landed. Use the 24-hour format.

***Position of Capture :**

Latitude: Record the degrees and minutes of latitude of the vessel at the time the animal was landed. Record **N/S** in the last blank.

Longitude: Record the degrees and minutes of longitude of the vessel at the time the animal was landed. Record **E/W** in the last blank.

Landed: Place a checkmark or X in the box to indicate that the turtle was landed. Landed means the turtle was brought on board the vessel. Leave blank if the turtle was not landed. **Describe the landing of the animal in the Comments Section.**

Tags Present: Record a Y, N or U to indicate whether tags were present on the sea turtle at the time of capture.

Release Information Block

Date of Release: The date the turtle was released. Use the standard date format (e.g. 24 JUL 2003).

***Time of Release :** Record the time the turtle was released. Use the 24-hour format.

***Position of Release :**

Latitude: Record the degrees and minutes of latitude of the vessel at the time the animal was released. Record **N** or **S** in the last blank to indicate the hemisphere.

Longitude: Record the degrees and minutes of longitude of the vessel at the time the animal was released. Record **E** or **W** in the last blank to indicate which hemisphere.

Disposition Code: Record the code corresponding to the fate of the turtle. In the comments section on the back, record specific notes about any damage to the turtle. Describe the behavior of the turtle when it was released. **Note:** If the initial condition of the turtle changes, then the final condition should be recorded. Record complete notes of the change.

***** Sometimes an animal may be observed caught and then quickly released from the gear during hauling operations. In such cases, the Positions of Capture and Release can be the same. Just make sure the Times of Capture and Release are different.

Disposition Code List

Previously Dead [01]: The turtle was already dead when it was captured/taken. This does not include turtles that appear to have died as a result of fishing operations.

Note: A **previously dead** turtle will usually have rotten tissue around the eyes and vents, and it may be bloated and foul smelling. It also may have sloughing scutes and scales.

Released Unharmed [02]: You observed the turtle returned to the sea alive and uninjured. This would apply to entangled sea turtles that escape from the gear before landing.

Released Injured [03]: The turtle was injured as a result of fishing operations, or by vessel personnel. "Injured" applies to animals removed from the gear with obvious physical injury or with gear attached. Turtles that are hooked are considered injured. Turtles that are entangled and landed should be considered injured too.

Died [04]: The turtle died due to injuries incurred during fishing operations, or was returned to the sea while comatose.

Escaped [05]: You observed the turtle leaving the gear or deck unaided after capture or entanglement, with no apparent injuries.

Treated as Catch [06]: The turtle was not previously dead and was sacrificed for market, table, or other use.

Other [07]: The final fate of the turtle is different from the above codes. Describe in Comments.

Unknown [08]: The final fate of the turtle was not observed.

Tags Removed & Tags Applied: Record a checkmark or X in the box to indicate if tags were removed from or applied to the turtle. Tags should only be removed if they are unreadable or in danger of falling off. Salvage any tags you remove for return to port. If you apply any tags (flipper or PSAT), make sure to fill out a Tag Log for each tag applied to the turtle.

Hooking / Entanglement Block

Hook/Entangled: Answer each question Y, N, or U. A turtle can be both hooked and entangled.

Hook/Entanglement Location: Select the code that indicates which part of the turtle the line was hooked & wrapped on. If more than one part is hooked or entangled, use the code indicating the part that had the most or most severe connection. Photograph the hook/entangled area, if possible and describe on Comments form.

Gear Removal Code: Choose the code that best indicates how the animal was removed from the longline gear.

Remaining Gear: Select the letter code indicating what type of fishing gear, if any, was not removed from the turtle. On the lines below, describe what type and amount (length) of gear left on the turtle. If the turtle is dead, photograph the remaining gear before wrapping the turtle up for storage.

Morphology Block

Answer these four questions with a **Y, No** or **U.**

Skin Covered Carapace: Is the carapace covered by thick rubbery skin?

Overlapping Scutes: Are there overlapping scutes on the dorsal surface?

Inframarginal Scutes w/ Pores: Do the inframarginal scutes have pores?

1 Pair Prefrontal Scales: Does the turtle have only one pair of prefrontal scales? If there are more than 1 pair (more than two "2"), enter an N in the box.

Carapace Scute Counts Block

Number of Left Costal Scutes: Count the number of costal scutes on the left side of the carapace and record the number. Refer to the diagrams on the back of the form for clarification.

Number of Right Costal Scutes: Count the number of costal scutes on the right side of the carapace and record the number. Refer to the diagrams on the back of the form for clarification.

Number Vertebral Scutes: Count the number of scutes on the midline of the carapace and record the number. Refer to the diagrams on the back of the form for clarification.

Number Inframarginal Scutes: Count the number of scutes on either side of the plastron. If the number of inframarginal scutes on each side differs, enter the higher number in the box, and record the details on the Comment Log.

Dorsal Carapace Coloration: Select the code that describes the general color of the carapace.

Measurements Block

Take measurements in centimeters, to the nearest **0.5-cm**, using a tape measure for curved measurements and a meter stick calipers for the straight measurements. Consult the illustrations on the back of the form for guidance. Try to remove any epibiota that affects any of these measurements, record the details on the back of the form.

The meter stick calipers may need adjustment and calibration periodically. Calibrate by comparing with the fiber tape measure, and tighten the locking screws on the stationary caliper jaw.

Carapace Length (curved): Record the distance between the center of the nuchal (the scute in the middle of the front edge of the carapace) scute and the rear edge of the carapace, following the curvature of the dorsal centerline. If there is a notch between the two posterior marginal scutes, measure the distance to the rear most point of the scutes. For turtles with a keel running down the center of the carapace (leatherbacks, juvenile olive ridleys and loggerheads), measure to one side of the median keel, not on top of it.

Carapace Width (curved): Record the maximum distance between the lateral edges of the carapace, measured over the curvature of the shell.

Plastron Length (straight): Record the maximum distance from the anterior margin of the (front tip of the plastron) intergular scute to the posterior margin of the (rear tip of the plastron) postanal scute. Use the 2m calipers for this data element.

Tail Length: Measure and record the distance between the posterior most point of the plastron and the tip of the tail. Use a tape measure for this data element.

Carapace Length (straight): Measure and record the distance between the center of the nuchal scute and the rear edge of the carapace. If there is a notch between the two posterior marginal scutes, measure the distance to the rear most point of the scutes. Use the 2m calipers for this data element.

Carapace Width (straight): Measure and record the maximum distance between the lateral edges of the carapace. Use the 2m calipers for this data element.

Sketch the dorsal and ventral views to illustrate lesions or injuries.

Light Device

Complete these elements only if devices were used on this set, and the device type has been indicated on the Gear Configuration form.

Color Code: Record the code that best indicates the color of the light emitted by the device. Code 8. Mixed is not a valid choice for this element.

Proximity Code: Select the code that shows how far away the next light device is from the branchline the turtle was on.

Turtle Specimen Collection Requirements

Observers are to request, from vessel personnel, that **any dead sea turtles** encountered during a cruise be **retained** after processing for return to Honolulu. This includes dead

turtles that may be encountered "free floating" and which are not necessarily attached to any gear. Very large sea turtles, i.e., full-grown Leatherbacks, may present problem with handling and storage on board the vessel until the end of the cruise. Dead turtles too large to bring aboard or store in the vessel's hold space may be returned overboard after all samples, measurements, and photographs are taken.

Resuscitation must be attempted on sea turtles that are comatose, or inactive following these guidelines:

(1) Placing the turtle on its bottom shell (plastron) so that the turtle is right side up and elevating its hindquarters at least 6 inches (15.2 cm) for a period of 4 up to 24 hours. The amount of the elevation depends on the size of the turtle; greater elevations are needed for larger turtles. Periodically, rock the turtle gently left to right and right to left by holding the outer edge of the shell (carapace) and lifting one side about 3 inches (7.6 cm) then alternate to the other side. Gently touch the eye and pinch the tail (reflex test) periodically to see if there is a response.
(2) Sea turtles being resuscitated must be shaded and kept damp or moist but under no circumstance be placed into a container holding water. A water-soaked towel placed over the head, carapace, and flippers is the most effective method in keeping a turtle moist.
(3) Sea turtles that revive and become active must be released over the stern of the boat only when fishing or scientific collection gear is not in use, when the engine gears are in neutral position, and in areas where they are unlikely to be recaptured or injured by vessels. Sea turtles that fail to respond to the reflex test or fail to move within 4 hours (up to 24, if possible) must be returned for Scientific Research.

When a sea turtle comes aboard dead and will be brought back to port:

☛ Leave any entangled line or hook in place. Leave the free end about 2ft long.

☛ Do not apply flipper tags and leave any tags present in place.

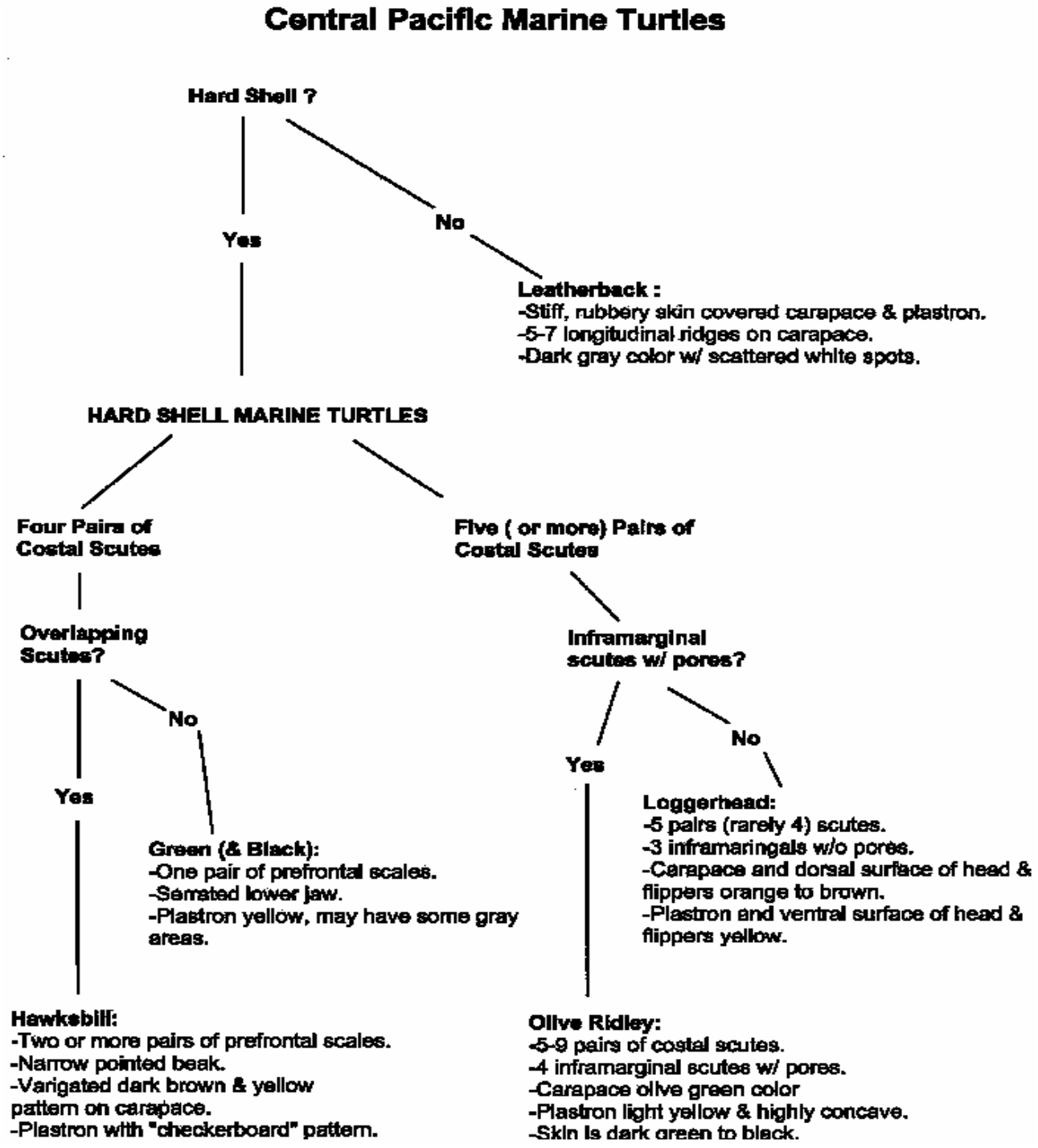
☛ Collect two skin biopsies.

☛ Take **three (3) photographs of identifying characteristics**: Dorsal, Ventral, and Frontal views.

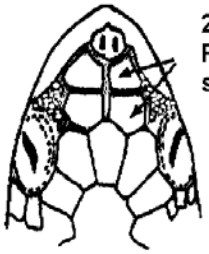
☛ Complete a Sea Turtle Biological Data Form.

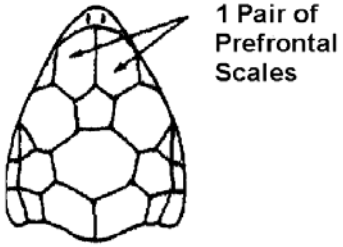
☛ Record the turtle on the Specimen Log and update your Radio Report form.

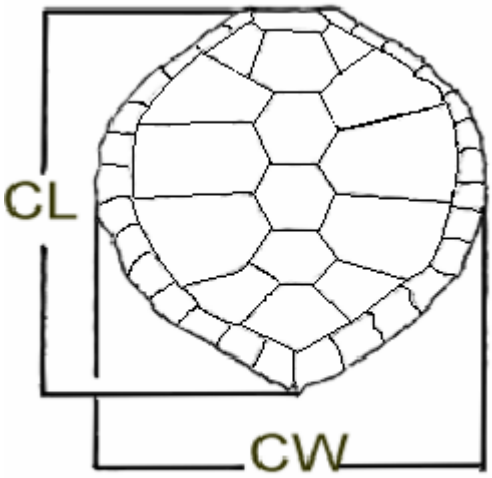
☛ Double wrap and store frozen or buried in ice until the turtle is secured at the NMFS, Pacific Islands Fishery Science Center in Honolulu, HI.


Central Pacific Marine Turtles
Hard Shell ?
Yes
No
Leatherback :
-Stiff, rubbery skin covered carapace & plastron.
-5-7 longitudinal ridges on carapace.
-Dark gray color w/ scattered white spots.
HARD SHELL MARINE TURTLES
Four Pairs of Costal Scutes
Five (or more) Pairs of Costal Scutes
Overlapping Scutes?
Yes
No
Green (& Black):
-One pair of prefrontal scales.
-Serrated lower jaw.
-Plastron yellow, may have some gray areas.
Hawksbill:
-Two or more pairs of prefrontal scales.
-Narrow pointed beak.
-Varigated dark brown & yellow pattern on carapace.
-Plastron with "checkerboard" pattern.
Inframarginal scutes w/ pores?
Yes
No
Loggerhead:
-5 pairs (rarely 4) scutes.
-3 inframaringals w/o pores.
-Carapace and dorsal surface of head & flippers orange to brown.
-Plastron and ventral surface of head & flippers yellow.
Olive Ridley:
-5-9 pairs of costal scutes.
-4 inframarginal scutes w/ pores.
-Carapace olive green color
-Plastron light yellow & highly concave.
-Skin is dark green to black.

Sea turtle reference diagrams







Points to measure for sea turtle carapace lengths.
CL = Carapace Length
CW = Carapace Width

Chapter 11 Seabird Biological Data Form

Introduction

The **S**eabird **B**iological **D**ata form is used for recording data from seabirds incidentally caught during longline fishing operations. These data will be used to determine the number, species, and the condition of seabirds involved in the longline fishery in the central Pacific. These data are critical to the development of conservation and recovery strategies.

Remember

Specimen collection and life history work are prioritized so if activity must be curtailed, the most important data and specimens have the highest probability of being collected.

The priorities of data & sample collection are as follows:

- Record sea turtle identifying characteristics, morphometric measurements, and tag data. Retain dead sea turtles after processing.
- Record seabird identifying characteristics and tag data. Retain dead seabirds after processing; leave any leg bands in place.
- Collect & record fish measurements.

General Instructions

Complete a Seabird Biological Data form for every seabird observed caught (including entangled individuals). If a seabird is observed caught, but it is not landed, complete as much of the form as possible. For unlanded seabirds you should complete at a minimum the following data elements: 1. header information on the form. 2. capture information block 3. release information block.

Complete a Seabird Bycatch Data Form for every seabird brought aboard. If you are not sure of what to record in any element leave the data field blank, and describe the situation with notes. **Take photographs of all unidentified seabirds that are caught.**

Data Elements

Observer ID: In the upper left corner of the form, fill in the spaces with the Observer ID number assigned to you during training.

Trip Number: The unique six-digit number assigned by the Operations Coordinator. In the first two blocks, record **LL** for longline. After the second block, enter the four digit sequential number.

Set Number: Record the set number from the Catch Event Log.

Species Code: Record the three-letter code from the Species Code list, which corresponds to the species of the seabird in the code box.

Check boxes: Place a checkmark or X on the box for each type of additional documentation or information was collected form this specimen.

Catch Log Page No.: Record the page number from the appropriate Catch Event Log form.

Catch Log Line No.: Record the line number from the Catch Event Log that contains information on the capture of this particular seabird.

Capture Information
Date of Capture: The date the bird was landed. Use the standard date format.

***Time of Capture :** Record the time the bird was landed. Use the 24-hour format.

***Position of Capture :**

Latitude: Record the degrees and minutes of latitude of the vessel at the time the animal was landed. Record **N/S** in the last blank.

Longitude: Record the degrees and minutes of longitude of the vessel at the time the time the animal was landed. Record **E/W** in the last blank.

Landed: Place a checkmark or X in the box to indicate whether or not the bird was landed. Landed means the seabird was brought on board the vessel. Leaving this box blank means the bird was not brought on board the vessel. Describe the landing of the animal in the Comments section.

Release Information
Date of Release: The date the bird was released. Use the standard date format.

***Time of Release :** Record the time the bird was released. Use the 24-hour format.

***Position of Release :**

Latitude: Record the degrees and minutes of latitude of the vessel at the time the animal was released. Record **N** or **S** in the last blank to indicate the hemisphere.

Longitude: Record the degrees and minutes of longitude of the vessel at the time the time the animal was released. Record **E** or **W** in the last blank to indicate which hemisphere.

***** Sometimes an animal may be observed caught and then quickly released from the gear during hauling operations. In such cases, the Positions of Capture and Release can be the same. Just make sure the Times of Capture and Release are different.

Disposition Code: Record the code corresponding to the fate of the bird. In the notes section, record specific notes about any damage to the bird. **Note:** If the initial condition of the bird changes, then the final condition should be recorded. Record complete notes of the change.

Previously Dead [1]: The bird was already dead when it was captured/taken. This does not include seabirds that appear to have died as a result of the fishing operations.

Note: A **previously dead** seabird may have rotten tissue around the eyes and vents, and it may be bloated and foul smelling. It also may have sloughing skin and feathers.

Released Unharmed [2]: You observed the bird returned to the sea alive and uninjured. This would apply to entangled seabirds that escape from the gear before landing.

Released Injured [3]: The bird was injured as a result of fishing operations, or by vessel personnel. "Injured" is an animal removed from the gear with obvious physical injury or with gear attached. A seabird that is hooked is considered injured. A seabird that was entangled and landed should be considered injured.

Killed Accidentally [4]: The bird died due to injuries incurred during fishing operations, or was returned to the sea while comatose.

Escaped [5]: You observed the bird leaving the gear or deck unaided after capture or entanglement, with no apparent injuries.

Treated as Catch [6]: The bird was not previously dead and was sacrificed for market, table, or other use.

Other / Unknown [7]: The final fate of the bird involved in the set is unknown or whose condition after leaving the gear or deck was unobserved.

Hooking / Entanglement
Hooked/ Entangled: Answer **Y**, **N** or **U** for each element. Each box should be filled in independent of the other. A single bird will have two "yes" answers, if it was both hooked & entangled.

Hook/Entanglement Location: Select the code that indicates which part of the bird was hooked or entangled. Photograph the hook/entangled area, if possible and describe in the Comment section on the back of the form.

Gear Removal Code: Choose the code that best indicates how the animal was removed from the longline gear.

Remaining Gear: Select the letter code indicating what type of fishing gear, if any, was not removed from the bird. In the box below, describe what the type and amount (length) of gear left on the bird. If the bird is dead, photograph the remaining gear attached to the bird before wrapping it up for storage.

Morphology Block

Enter the appropriate code for each of these items; bill color, head color, and mantle color. If the tip of the bill is a different color than rest of the bill, write an X or checkmark in the box.

Light Devices Block

Complete these elements only if devices were used on this set, and the device type has been indicated on the gear configuration form.

Color Code: Record the code that best indicates the color of the light emitted by the device. **Code 8,** Mixed is not a valid choice for this element.

Proximity Code: Select the code that shows how far away the next light device is from the branchline the bird was on.

Chapter 12 Marine Mammal Biological Data From

Introduction

The **M**arine **M**ammal **B**iological **D**ata form is used to record the biological data from any pinnipeds (seals) and cetaceans (whales & dolphins) incidentally caught during fishing operations. The information obtained is used to develop baseline data on marine mammal species for which little information is available. These data can be used to estimate age at sexual maturity, birth rates, feeding habits, life span and sex ratios. This data together with mortality and population abundance data can be used to ascertain whether changes in population abundance are due to fishing activities in the Pacific.

This life history form is designed for volume specimen processing in the field, allowing the observer to write a minimum of information by checking off blocks in the upper "field" section of the form. The shaded blocks and lower portion of the form are for lab personnel use.

General Instructions

Complete a Marine Mammal Biological Data form for every marine mammal observed caught (including entangled individuals). If a marine mammal is observed caught, but it is not landed, complete as much of the form as possible. Try to get an estimated length of the animal.

If you cannot collect a particular measurement, explain in the **ADDITIONAL COMMENTS** section.

Complete only the "**In Field**" portion of the form. Do not mark the shaded boxes.

Data Elements

Observer ID: In the upper right corner of the form, fill in the spaces with the Observer ID number assigned to you during training.

Trip Number: The unique six-digit number assigned by the Operations Coordinator. In the first two blocks, record **LL** for longline. After the second block, enter the four digit sequential number.

Set Number: Record the set number from the Catch Event Log.

Species Code: Record the two-letter code from the Species Code list of the marine mammal captured.

Associated Log Forms: Place a checkmark or X in the box to indicate which additional log forms contain data associated with this marine mammal. If you mark a log form box,

make sure to complete the information on the indicated log. If you catch a marine mammal at the very minimum you should have photos, sketch, and comments.

Catch Form Page Number: Record the page number from the appropriate Catch Event Log form.

Catch From Line Number: Record the line number from the Catch Event Log that contains information on the capture of this particular marine mammal.

Capture Information Block

Date of Capture: The date the marine mammal came up. Use the standard date format (*e.g.* 24 JUL 2003).

***Time of Capture :** Record the time the marine mammal came up. Use the 24-hour format.

***Position of Capture :**

Latitude: Record the degrees and minutes of latitude of the vessel at the time the animal came up on a hook. Record **N/S** in the last blank.

Longitude: Record the degrees and minutes of longitude of the vessel at the time the animal came up on a hook. Record **E/W** in the last blank.

Landed: Place a checkmark or X in the box to indicate that the marine mammal was landed. Landed means the animal was brought on board the vessel. Leave blank if the animal was not landed. **Describe the landing of the animal in the Comments Section.**

Tags Present: Record a Y, N or U to indicate whether tags were present on the marine mammal at the time of capture.

Release Information Block

Date of Release: The date the animal was released. Use the standard date format (e.g. 24 JUL 2003).

***Time of Release :** Record the time the animal was released. Use the 24-hour format.

***Position of Release :**

Latitude: Record the degrees and minutes of latitude of the vessel at the time the animal was released. Record **N** or **S** in the last blank to indicate the hemisphere.

Longitude: Record the degrees and minutes of longitude of the vessel at the time the animal was released. Record **E** or **W** in the last blank to indicate which hemisphere.

Disposition Code: Record the code corresponding to the fate of the marine mammal. In the comments section on the back, record specific notes about any damage to the marine mammal. Describe the behavior of the animal when it was released. **Note:** If the initial condition of the marine mammal changes, then the final condition should be recorded. Record complete notes of the change.

***** Sometimes an animal may be observed caught and then quickly released from the gear during hauling operations. In such cases, the Positions of Capture and Release can be the same. Just make sure the Times of Capture and Release are different.

Disposition Code List

Previously Dead [01]: The marine mammal was already dead when it was captured/taken. This does not include animals that appear to have died as a result of fishing operations.

Note: A **previously dead** marine mammal will usually have rotten tissue, and it may be bloated and foul smelling.

Released Unharmed [02]: You observed the marine mammal get away from the gear on its own accord; in this instance it was probably not hooked and was not yet entangled in the gear .

Released Injured [03]: The marine mammal was injured as a result of fishing operations, or by vessel personnel. "Injured" applies to animals removed from the gear with obvious physical injury or with gear attached. Marine mammals that are hooked are considered injured. Marine mammals that are entangled should be considered injured too.

Died [04]: The marine mammal died due to injuries incurred during fishing operations.

Escaped [05]: You observed the marine mammal leaving the gear unaided after capture or entanglement, with no apparent injuries.

Treated as Catch [06]: The marine mammal was not previously dead and was sacrificed for market, table, or other use.

Other [07]: The final fate of the marine mammal is different from the above codes. Describe in Comments.

Unknown [08]: The final fate of the marine mammal was not observed.

Tags Removed & Tags Applied: Record a checkmark or X in the box to indicate if tags were removed from or applied to the marine mammal. Tags should only be removed if they are unreadable or in danger of falling off. Salvage any tags you remove for return to port.

Hooking / Entanglement Block

Hook/Entangled: Answer each question Y, N, or U. A marine mammal can be both hooked and entangled.

Hook/Entanglement Location: Select the code that indicates which part of the animal the line was hooked & wrapped on. If more than one part is hooked or entangled, use the code indicating the part that had the most or most severe connection. Photograph the hook/entangled area, if possible and describe in the comments section.

Gear Removal Code: Choose the code that best indicates how the animal was removed from the longline gear.

Remaining Gear: Select the letter code indicating what type of fishing gear, if any, was not removed from the marine mammal. On the lines below, describe what type and amount (length) of gear left on the animal.

Female Block

Lactating: Is there any indication of lactation? Place a check in the box if you observe this. If the specimen is a male, leave this box blank.

Fetus Gender: Put an M or F in the box indicating the sex of any fetus 25-cm.

Fetus Length: Record in centimeters and tenths the length of any fetus 25-cm.

Curvilinear: If the length of the fetus was determined by a curvilinear measurement place a check in the box; if not then leave blank.

Measurements Block

Length: For cetaceans, record to the nearest centimeter, the length from the tip of the upper jaw to the notch of the tail fluke. For pinnipeds, record to the nearest centimeter, the length from the tip of the snout to the end of the tail.

Note: If the animal cannot be straightened out due to rigor mortis, record the curvilinear length along the animal's backbone.

Curvilinear: If the length of the animal was determined by a curvilinear measurement place a check in the box; if not then leave blank.

Girth: For cetaceans, record to the nearest centimeter the girth measured just anterior to the leading edge of the dorsal fin. For N. right whale dolphins (*Lissodelphis borealis)* and pinnipeds, measure girth at the axilla, just posterior to the insertion of the flippers.

Flipper Length: For PINNIPEDS, record the distance in centimeters from the anterior insertion of the right rear flipper to the tip of the first toe.

Note: If the animal cannot be straightened out due to rigor mortis, record the curvilinear length along the animal's backbone.

Light Device

Complete these elements only if devices were used on this set, and the device type has been indicated on the Gear Configuration form.

Color Code: Record the code that best indicates the color of the light emitted by the device.
Code 8 (Mixed) is not a valid choice for this element.

Proximity Code: Select the code that shows how far away the next light device is from the branchline the marine mammal was on.

Identification:

Diagnostic Characteristics: Try to list five of the diagnostic characteristics you used to identify this animal in the comments section.

Sketch: Sketch the features you saw and used to identify this animal on the sketch log.

ADDITIONAL COMMENTS: Describe in as much detail as possible all tag information; tag type, number, address, color, and location on the animal. Also record any other facts that you think are important.

Specimen Collection Requirements

Refer to the tissue sampling protocols in the appendices.

Chapter 13 USFWS FORM 3-177 & CITES IMPORT FORMS

The **CITES Import Form** and **USFWS 3-177** are used by the U.S. Fish & Wildlife Service to track the importation of protected species into the US and its territories.

Two **(2) USFWS Form 3-177's** and one **(1) CITES** Import form should be completed for each trip when protected species specimens (parts or whole animals) are collected outside of 200 miles.

The **USFWS 3-177** is completed as follows. Refer to example at the end of this section.

Upper left hand block

1. Date: write the date of arrival at the port of entry.

2. I/E (import/export) license number: write **N/A**.

3. Indicate one: check box for import.

4. Port of Clearance: write **H A** in the blanks. (for Honolulu)

5. Purpose code: write **S** in the blank.

6. Customs Entry Number: write **N/A**.

Upper right hand block

7. Name of Carrier: write name of vessel.

8. Airway bill or bill of lading number: write **N/A**.

9. Transportation code: write **O** in the top blank. Write **N/A** in the blanks for *License* and *State*.

10. Bonded location for inspection: write **N/A**.

11. Number of cartons containing wildlife: write in the number of packages.

12. Package markings containing wildlife: write the sample number.

13. U.S. Importer of record: the address should already be typed in.

14a. Foreign supplier/receiver: the phrase **Taken from high seas** should already be typed in the box.

14b. Write **XX** in the blanks provided.

15. Customs broker, shipping agent....: write **N/A**.

16a. & 16b. Scientific name/common name: write the required (English) name in the boxes available.

17a. Leave blank.

17b. US Cites Permit Number: the number (**US022729/9**) should be already typed in.

18a. Description code: use the following **-BOD**..dead animal (whole). **-SPE**..specimens (scientific, biological incl. blood and/or tissue).

18b. Source: the code **W** (specimen taken from the wild) should already be typed in.

19a. Quantity/Unit: write **NO** (number) and the number of specimens.

19b. Monetary value: write **N/A**.

20. Country of Origin: write **High Seas**.

21. Sign and date in the blanks indicated.

The **CITES Import** form should be completed as follows. Refer to the example on page 120.

Item 11: indicate the total number of animals from which specimens were collected.

Item 12: write **High Seas**.

When these forms are complete, put them in your data folder and notify your debriefer.

USFWS 3-177 : EXAMPLE

O.M.B. No. 1018-0012
Expiration Date: 10/31/2003

DECLARATION FOR IMPORTATION OR EXPORTATION OF FISH OR WILDLIFE

Please Type or Print Legibly

1. Date of Import/Export: (mm/dd/yyyy) __ __ / __ __ / __ __ __ __
2. I/E License Number: N/A
3. Indicate One: [X] Import [ ] Export
4. Port of Clearance: H A
5. Purpose Code: S
6. Customs Entry Number: N/A
7. Name of Carrier:
8. Air Waybill or Bill of Lading Number: Master: House:
9. Transportation Code: O
License: N/A State:
10. Bonded Location for Inspection: N/A
11. Number of Cartons Containing Wildlife:
12. Package Markings Containing Wildlife:

13. (indicate one) (complete name / address / phone number)
[X] U.S. Importer of Record
[ ] U.S. Exporter
DOC/NOAA/NMFS/SWR/PIAO
1601 Kapiolani Blvd., Suite 1110
Honolulu, HI 96814

14a. Foreign Supplier / Receiver: (complete name / address / phone number)
Taken From High Seas
14b. X X

15. Customs Broker, Shipping Agent or Freight Forwarder:
Phone Number / Fax Number:
Contact Name:

Species Code (Official Use)	16a. Scientific Name / 16b. Common Name	17a. Foreign CITES Permit Number / 17b. U.S. CITES Permit Number	18a. Description Code / 18b. Source	19a. Quantity / Unit / 19b. Total Monetary Value	20. Country of Origin of Animal
		US022729/9	W	N/A	High Seas
		US022729/9	W	N/A	High Seas
		US022729/9	W	N/A	High Seas
		US022729/9	W	N/A	High Seas
		US027729/9	W	N/A	High Seas

Knowingly making a false statement in a Declaration for Importation or Exportation of Fish or Wildlife may subject the declarant to the penalty provided by 18 U.S.C 1001 and 16 U.S.C. 3372 (d)

21. I certify under penalty of perjury that the information furnished is true and correct:
Signature Date
Type or Print Name

FOR OFFICIAL USE ONLY

Action/Comments:

Wildlife Inspected: None / Partial / Full

SEE REVERSE OF THIS FORM FOR PRIVACY ACT NOTICE

CITES IMPORT PERMIT: EXAMPLE

FORM 3-201A (1/97)

CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES OF WILD FAUNA AND FLORA

IMPORT PERMIT

Page 1 of 1

1. Original Permit/Certificate No.
01US022729/9

2. Valid until
05/28/2002

3. Permittee (name and address, country)
NATIONAL MARINE FISHERIES SERVICE SOUTHWEST REGION
501 WEST OCEAN BOULEVARD
SUITE 4200
LONG BEACH, CA 90802-4213

4. Consignee (name and address, country)
DOC/NOAA/NMFS/SWR/ PIAO
HAWAII LONGLINE OBSERVER PROGRAM

5. Special Conditions
- MUST COMPLY WITH ATTACHED GENERAL PERMIT CONDITIONS.
- U.S. ENDANGERED SPECIES (50 CFR 17.22).
- PERMIT MAY BE COPIED FOR MULTIPLE SHIPMENTS; PERMITTEE TO RETAIN ORIGINAL.
- A COPY OF THE ANNUAL REPORT AS REQUIRED UNDER NMFS/ESA PERMIT No. 1190 SEC.C 1. MUST BE SUBMITTED PRIOR TO RE-ISSUANCE OR UPON THE EXPIRATION OF THIS PERMIT WHICHEVER OCCURS EARLIEST.
- PERMITTEE MUST COMPLETE BLOCK 11 AND SHIPMENT #:_____. PRIOR TO EACH SHIPMENT.
- THIS RE-ISSUES AND AMENDS 00US022729/9 ISSUED 5/12/2000.

-May not be used for commercial purposes. -For live animals, only valid if the transport conditions comply with the CITES Guidelines for Transport of Live Animals or, in the case of air transport, with IATA Live Animals Regulations.

5a. Purpose of Transaction
S

5b. Security Stamp No.
US92 60 199

6. U.S. Management Authority

OFFICE OF MANAGEMENT AUTHORITY
U.S. FISH AND WILDLIFE SERVICE
DEPARTMENT OF THE INTERIOR
WASHINGTON, D.C. 20240
UNITED STATES OF AMERICA

05/29/2001
Issuing Date

United States Management Authority

AUTHORITY: Endangered Species Act of 1973 (16 USC 1531 et. seq.)

7/8. Common Name and Scientific name (genus and species) of Animal or Plant	9. Description of Part or Derivative, including identifying marks or numbers (age/sex if live)	10. Appendix No. and Source / 11. Quantity (including units) / 12. Country of Origin
A. Common Name: GREEN SEA TURTLE Scientific Name: CHELONIA MYDAS	9. INTRODUCTION FROM THE SEA: SAMPLES OR WHOLE CARCASS TOTAL NOT TO EXCEED 20.	10. 1 W 11. Quantity (including units) 12. Country of Origin
B. Common Name: LEATHERBACK SEA TURTLE Scientific Name: DERMOCHELYS CORIACEA	9. INTRODUCTION FROM THE SEA: SAMPLES OR WHOLE CARCASS TOTAL NOT TO EXCEED 50.	10. 1 W 11. Quantity (including units) 12. Country of Origin
C. Common Name: LOGGERHEAD SEA TURTLE Scientific Name: CARETTA CARETTA	9. INTRODUCTION FROM THE SEA: SAMPLES OR WHOLE CARCASS TOTAL NOT TO EXCEED 300.	10. 1 W 11. Quantity (including units) 12. Country of Origin
D. Common Name: HAWKSBILL SEA TURTLE Scientific Name: ERETMOCHELYS IMBRICATA	9. INTRODUCTION FROM THE SEA: SAMPLES OR WHOLE CARCASS TOTAL NOT TO EXCEED 20.	10. 1 W 11. Quantity (including units) 12. Country of Origin
E. Common Name: OLIVE RIDLEY SEA TURTLE Scientific Name: LEPIDOCHELYS OLIVACEA	9. INTRODUCTION FROM THE SEA: SAMPLES OR WHOLE CARCASS TOTAL NOT TO EXCEED 20.	10. 1 W 11. Quantity (including units) 12. Country of Origin

Specimen(s) will not be used for primarily commercial purposes. The recipient has suitable facilities to house and care for the specimen(s).

Chapter 14 Specimen Log

The **S**pecimen **L**og is a record of all specimens & samples collected by an observer during a cruise. Fill out as many forms as needed.

The header of the form contains the Observer ID number, Trip No. and Specimen Log page number.

Date: Enter the date the specimen was collected. This is usually, the same as the date the Set was hauled.

(This) Forms Page & Line Number: The page number that appears at the top of this form. The line number is pre-filled.

Set: Enter a two-digit number indicating the set that the specimen was collected from. If a specimen was collected while the vessel was not engaged in fishing operations leave blank and describe the situation with notes.

Catch Form, Page & Line Number: The form type is pre-filled with the code for Catch Log. Enter the Page & Line no. from the Catch Log that contains the data on the animal from which the specimen was collected from.

Specimen Code: Enter the single letter code that indicates the type of specimen was collected. Refer to the code chart on the left margin on the form.

Specimen Type: The English term for this specimen type.

Content Description: General comments about this specimen. Include either the Species Code or English common name of the organism from which the sample(s) were collected.

Collection Purpose: Explain the reason the specimen was collected. The two common reasons are research request and ID confirmation. If there is an unusual reason for collecting the specimen, explain with notes on the comment section of the form.

Specimen Delivered To: To be signed by the requesting party. This is handled by PIRO staff or the observer contractor.

At the end of each cruise, check each specimen label and match it on the Specimen Log to ensure the specimen numbers and contents are correct.

Sample and Data Collection Priorities

Samples

- Sea turtles, skin biopsies or whole dead animals

- Seabirds, whole - leave any leg bands present on the bird

- Marine mammal skin biopsies

- Selected biological samples from fish, as directed - see Circular Updates.

Data

- Collect & document data from all incidental catches and interactions of protected species. Sea turtles have the highest priority. Seabirds are second, and marine mammals are third.

- Record species composition and disposition of the catch.

- Record fishing locations and gear characteristics.

- Collect fish & shark measurements.

- Describe all incidents where tags are applied, observed, or removed on any caught animal.

Sample Collection General Comments

Make collections only if you have the proper storage medium & space.

It is best to collect a complete set of samples from an individual fish. A complete set of billfish samples includes: anal fin, otoliths, ovary samples, and the full stomach. Shark samples consist only of a tissue sample stored in ethanol or DMSO.

If you are collecting **full stomachs**, they **must be frozen**. Do not store stomachs on ice or in a refrigerator. The proteolytic enzymes remain active and will break down the stomach and its contents.

Specimen Collection Protocol

Refer to the appropriate Circular Update packet and the collection protocols in the Appendix of this field manual.

If resources permit, selectively collect specimens from very large **(>**200 cm EFL) and very small **(<**80 cm EFL) swordfish. It may be easier to collect the entire fish if it is very small.

Comments

Record all specimens & samples collected on the Specimen Log.

Specimen Numbering System

Each sample or specimen collected by an observer will have a unique 12 character specimen number assigned to it. This number, the specimen number, is composed of the *Trip Number*, *Set Number*, *Catch Log Form Page Number*. and *Catch Log Form Line Number*. Label each sample and record the information on the Specimen Log.

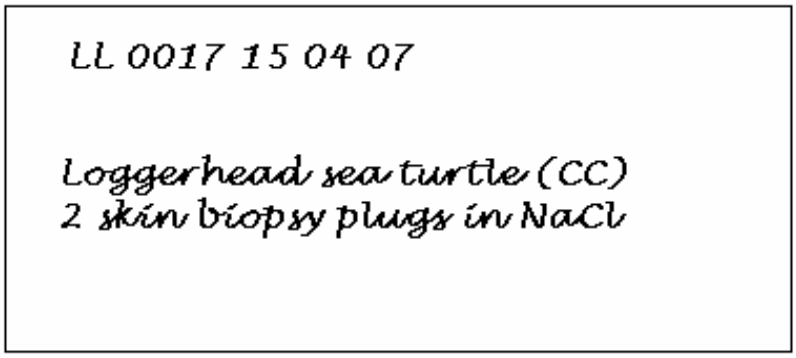
When filling out a specimen tag, include the following:

- Specimen number
- Species common English name
- Species code
- How the sample was stored

See the two examples below.

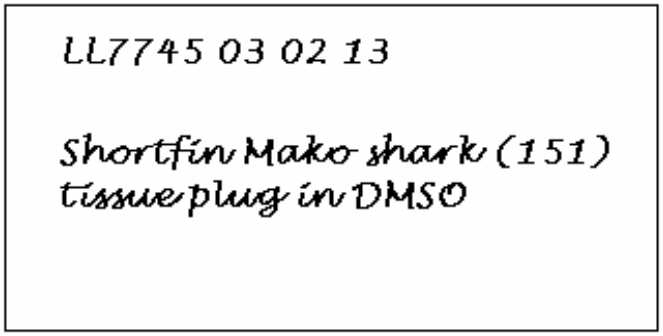
Example Specimen Tags

Example 1. Loggerhead sea turtle on Trip # LL0017. Set 15, Catch Log Form page 04, line 07.



The specimen number for example 1 is **LL0017150407**

Example 2. Shortfin Mako shark on Trip # LL7745. Set 03, Catch Log Form page 02, line 13.



The specimen number for example 2 is **LL7745030213**

Chapter 15 Tag Data Form

The **T**ag **D**ata **F**orm is a record of data on every tag recovered or deployed during a tip. The recovery of tagged animals is rare. The information from a recovery is very important to researchers and resource managers in several agencies.

Fill out the header information with the appropriate data. Fill out a separate form for each tag encountered on an animal.

Species Code: Enter the two letter or three-digit species code.

Tag Event Type: Select AP, RC or RM to indicate if a tag was Applied (AP), Recovered (RC) or Removed (RM). Describe the reason for removal in the comments section of the form. **Note:** Only remove tags from animals if they are in danger of falling off or are unreadable.

> ►If a sea turtle is captured and it already has flipper tags on its front flippers; **leave them in place**. Fill out a Tag Data Form for each tag recovered, and another one for each of the flipper tags you place on the flippers.
>
> ►If a banded, dead albatross is encountered and it is salvaged (brought on board and saved) during longline fishing operations; leave the bands in place on the bird's leg.

Tag Number: Fill in the boxes with the number-code on the tag. Make sure the sequence matches what is on the tag. Different tags may have different mixes of letters & numbers; E-770 is not the same tag as 770-E.

Tag Type Code: Select the code from the reference table that indicates the type of tag encountered. If you are unsure of the type of tag, draw a picture and take a photograph of the tag against a white or neutral colored background.

Tag Location Code: Select the code for where the tag was attached to the animal's body.

Tag Material Code: Enter the code for the material the tag is constructed of. Inconel is the type of metal used for the sea turtle flipper tags. Some tags routinely placed in fish or sharks are made of wire with a plastic sheath. Consider these tags as made of plastic.

Tag Color Code: Select the code for the color of the tag. If the tag looks like it was faded, record the color of the tag as it appears now, not what you think it may have been. Many tagging programs maintain a set of originals and a set that have been exposed to the environment. A tag that was originally red can fade to a pink-ish color, but not be the same color "pink" as a tag that was originally pink.

Chapter 16 Photo Log

The **P**hoto **L**og is a record of photos taken by an observer during the cruise. It is used to match the photos to the data during the debriefing. All photos will be reviewed by the observers and their debriefers together.

A separate Photo Log should be filled out for each trip. One line should contain all the photos of a single subject. State the number of pictures in the description.

Date: Enter the date the photo was taken.

Set: Enter a two-digit number indicating the set that the subject was captured.

Form: Enter the two letter code from the Form Code reference chart on the left edge of the form.

Page & Line Number: Enter the Page & Line no. of the form that refers to the subject of the photo.

Camera Number: Enter your longline trip number (i.e.: 9999)

Frame Number: Leave the frame number blank; this will be filled in during the debriefing process.

Photo description: A few key words, specimen ID number or short sentence that briefly describes the photo. Also note how many photos were taken of the subject.

Photographs

Cameras are to be used for pictures of sea turtles, birds, fish, or marine mammals. All unidentified items (i.e.: animals, damage, gear) should also be photographed. Photograph specimens on deck or at close range when they are out of the water. Photograph ***all*** incidentally caught sea turtles, birds and marine mammals. Compose photographs so that the vessel identity and crew remain anonymous.

When taking a photograph with the sun at your back, make sure to frame the photo so that shadows do not fall across the subject. Avoid direct mid-day sun. Photograph the left side of fish. For sea turtles, it is useful to place a label near the subject to help identify it. Include the specimen number and species name in large block letters on a piece of paper. If it is not possible to include this label with the subject, then immediately preceding that photograph, compose a picture that contains the appropriate label only.

Place the specimen and a meter stick or other object for scale against a plain contrasting background. Orient the camera perpendicular to the specimen to obtain a full side view and fill the viewfinder with the specimen, then take the picture. Use “Macro”

setting to capture close ups of specific ID characteristics (finlets, lateral lines, etc.).If the animal is too large to fit in one frame, take a shot of the head with the front half of the body, and another of the rear half of the body. For fast moving species (like bowriding mammals), photograph with high speed setting, and take video clips when needed. As a guideline, 10-20 seconds should be adequate video footage to identify members of a pod, but use your discretion keeping in mind memory space. Do not delete photos, but should memory space become an issue, you may review your photos and delete poorly developed shots (as in flash white-outs and too dark shots). Your camera is issued with a travel charger, and it is recommended to charge your battery nightly. The underwater camera housing should be rinsed nightly, and soaked for 10-15 minutes at the completion of each trip. The entire camera is to be brought in during debriefing; it is part of your data!

Personal photos are allowed, if they do not identify the vessel or crew. Scientific pictures take priority over personal photos. Copies of personal photos will be made available upon request. You will have to supply your own CD's.

The following subject views are helpful in identifying animals:

a. Left Side view (showing dorsal fin if fish, shark, or marine mammal)
b. Dorsal view
c. Ventral view
d. Top of head, close up (macro setting)
e. Bottom of head, close up (macro setting)
f. Tail flukes, top & bottom
g. Any ID characteristics, close up (macro setting)

Avoid oblique angled shots or direct head on views. They may make interesting photos, but they are usually useless for identification purposes.

*Scale objects:

- yard/meter stick
- measuring tape
- tool (deck knife, ice shovel, butcher saw)
- pencil/pen/coin for close-up shots

* line, lumber or deck hoses are bad, because it is often hard to determine their dimensions from the picture.

Check the photos box on the Catch Log and make sure to record the camera and frames on the Photo Log.

In order to verify the identification of fish, please take a photograph of each species seen during your first three trips. When possible, photograph juvenile tunas as examples of the species instead of adults.

Problematic Species to Identify

Please try to photograph the following species if you think you have encountered them. They may be rarely encountered in this fishery or are difficult to identify in the field.

Sharks: a. Common thresher b. Longfin mako
c. Black-tip shark d. Cookie cutter
e. Salmon shark f. Galapagos shark
g. Sand tiger, any species h. Megamouth

Rays: a. Mobula b. any ray with a WHITE ventral side.

Billfish*: a. Black marlin b. any unid. Billfish

Bony Fish: a. Scabbardfishes b. King-of-Salmon
c. Pompano dolphinfish d. Cutlassfishes
e. Short-nose lancetfish f. Ribbonfishes
g. Hammerjaw h. Bluefin tuna
i. Longfin escolar j. any unid. Fish
k. Roudi's escolar

* Special notes for photographing billfish. Take a photo of the head, from one side, showing the dorsal fin held erect. Take a photo of the caudal peduncle (tail stock), from one side, showing the insertion of the second dorsal & second anal fins. Often billfish are too large to fit in a single frame of a photo. Try to photograph the entire body of the fish by taking one shot of the front half of the body and a second of the rear half of the body.

Chapter 17 Sketch Log

The **S**ketch **L**og is provided as a place for observers to draw sketches of animals for ID purposes, or gear configurations. This form should not be confused with the ID Sketch forms you may be issued during your first 2-3 trips.

Complete the boxes for Observer ID number,Trip number and Date.

Assoc. Form: Use the two-letter code for the form that the sketch pertains to.

Page & Line Number: Fill in the page and line number of the form that contains the information the sketch is related to.

Sketch Caption/Short Description: A short sentence or key words describing the subject of the sketch. Once scanned, this will be used as the title of the image.

Long Description: Use this area to describe characteristics that you are trying to portray in your sketch.

Chapter 18 Radio Reporting Instructions

Introduction

The **L**ongline **R**adio **R**eporting worksheets have been developed to provide observers with the means to provide departure/arrival data and specimen collection information to shore-side personnel, as well as to report difficult situations, harassment, or assault while on a vessel assignment

The reporting worksheet consists of four code boxes. The box in the upper right hand corner is completed by the Operations Coordinator and contains cruise information, giving the observer name, vessel name, call sign, and cruise number.

The box at the right center of each worksheet contains five personal status codes. Each code describes your treatment by vessel personnel, and how it is affecting your work. The status codes are not for reporting medical conditions (re: sea sickness).

The following definitions describe the five personal status codes.

Code 0: I'm OK - Work OK

"The situation aboard the vessel is acceptable. I am being treated with appropriate courtesy, according to my understanding of the position."

Code 1: I'm OK - Work Rough But Workable

"The situation aboard the vessel is somewhat deteriorated. I am meeting resistance to my duties. I am, however, confident that I can complete my assignment."

Code 2: I'm OK - Work Not OK But Workable

"The situation aboard the vessel is poor, some of my duties have been compromised. Because of difficulties obtaining specimens or positions, or use of the radio, there may be a need for enforcement to review my trip upon my return. I have some doubts that this assignment can be successfully completed."

Code 3: I May Not Be OK - Work Not OK

"The situation aboard the vessel is unbearable, I feel that to continue my duties would be a personal risk. I request that an enforcement agent be available for debriefing as soon as possible upon my return. I am being threatened and/or harassed."

*** * * Incidents of sexual harassment warrant a Code 3 * * ***

In this instance, the agency will take steps to have a NOAA enforcement agent present when the vessel returns to port to investigate the situation.

Code 4: I'm Not OK - Work Not OK Situation Severe

"I have suffered an assault, PLEASE make every effort to remove me from this vessel at the earliest possible time. Notify all appropriate authorities so that they can assist me."

In this instance, the agency will take steps to involve NOAA enforcement personnel, the Federal Bureau of Investigation, and the United States Coast Guard. An evacuation will be arranged or the vessel will be asked to return to port.

As soon as you can, take your EPIRB outside, and turn it on. Once on, stow it somewhere and leave it on.

General Instructions

As you prepare the weekly radio report for transmission to the PIRO Observer Program, assess your situation aboard the vessel. Using the number assigned to the code type that best describes the situation aboard the vessel, fill out the status box in the radio-reporting matrix.

0 = I'm OK, Work OK;
1 = I'm OK, Work rough, Workable;
2 = I'm OK, Work not OK, Workable;
3 = I may not be OK, Work not OK; and
4 = I'm not Okay, Work not OK.

Your status code will be transmitted along with your weekly radio report. The captain is to be apprized of the codes and their meaning prior to each transmission.

During decoding of the report, your status will be determined and appropriate action taken. If the Hawaii Observer Program does not receive a scheduled radio report, from either the SSB radio or from a commercial high seas radio-telephone service by Wednesday, close of business; the vessel owner or designated agent will be requested to contact the vessel, for the observer's report.

Note: If for any reason it is not possible to contact the Hawaii Observer Program directly, the observer should request that the radio report and a message be relayed through a nearby fishing vessel or by fax when feasible.

Remember, any instance of intimidation, harassment or interference is to be reported to the captain as soon as possible and documented in your Documentation Notebook.

At the bottom of the worksheet in the Radio Reporting Summary block, summarize your radio transmissions, whether you make contact or not. Record the date, time, frequency, and notes regarding the transmission.

The box in the upper left-hand corner of the worksheet is the radio-reporting matrix. This block consists of five rows and four columns. Each column is labeled: **A**, **B**, **C**, **and D.** Each row will receive a number that indicates the sequence in which the rows are to be transmitted. The information encoded in the radio reporting matrix will include your status code, departure date and time, the type of specimens collected, and estimated date and time of arrival. The shaded areas are scramble boxes. Any number may be entered in these boxes to help disguise the encoded data.

Complete the radio-reporting matrix from top to bottom using numbers **0** through **9**. Begin by recording the one digit number in the status square that best reflects the situation aboard the vessel.

Next fill in the "DEP / ARR" box to indicate if the dates & times are Departure or Arrival information. When making a mid trip radio report, fill in the DEP / ARR box with 3 for Mid-trip.

Complete the departure date using two digits for the month (**01** through **12**) and two digits for the day (**01** through **31**).

Use the 24-hour clock when recording the departure time. Use two digits for the hour (**00** through **24**) and two digits for the minutes (**00** through **59**). The squares are labeled; "DEP / ARR MONTH", "DEP /ARR DAY", "DEP / ARR HOUR" and "DEP / ARR MINUTES."

Fill in the shaded squares with random numbers, 0-9. To avoid confusion, avoid using the same number to fill in the squares. Over the SSB radio, it is sometimes difficult to distinguish between the numbers like "111" and "1111".

On subsequent reports, unless there is a port stop, record a number greater than "**2**" in the first square of the "DEP / ARR MONTH" and "DEP / ARR HOUR" blocks to indicate that there are no changes to report. It is important to notify the Port Coordinator and the Observer Program office by telephone whenever the vessel makes a port stop.

To report specimens use the following codes:

0 = None
1 = Whole animal
2 = Skin plug (for mtDNA analysis)
3 = Skin plug & Whole animal
4 = Other parts

In order to facilitate the recovery of specimens at the docks, record the estimated date and time of arrival in the respective code boxes. If you do not know the scheduled arrival time or date, be sure a number greater than "**2**" is used in the first square of the "DEP /ARR MONTH" and "DEP /ARR HOUR" boxes to indicate that no information is available. Any number may be used in the subsequent squares as long as a number greater than "**2**" is used in the first square of the Departure/Arrival boxes. Remember, numbers should be used that make it more difficult to decipher the radio-reporting matrix. Always

prepare new numbers for each transmission. Never communicate that your report is the same as last time and avoid using a single repetitive number for all boxes.

►NEVER USE the common name of ANY protected species that have been caught or entangled during a cruise when talking on the SSB (to Honolulu or other observers).

PIRO Observer Programs maintain a Single Side Band (SSB) high seas radio base station in Honolulu, Hawaii. The base station call letters are **KWL 48** (**K**ilo **W**hiskey **L**ima). This is a Federal Communications Commission (FCC) station licensed for international use. Users must comply with FCC regulations.

Three channels are monitored daily Monday through Friday, except holidays. The following schedule is for Hawaii Standard Time.

Channel	Frequency	Time Schedule
Channel 8A.	**(8.294.0 MHz).**	**0800 to 0900 hours**
Channel 12A.	**(12.353.0 MHz).**	**0900 to 1000 hours**
Channel 16A.	**(16.528.0 MHz).**	**1000 to 1500 hours**
Channel 12A.	**(12.353.0 MHz).**	**1500 to 1630 hours**

Radio reports are to be made weekly on **Monday**. To initiate a call, arrange with the captain to call KWL-48 Honolulu using the SSB radio. Some vessel operators may prefer to call the data in for the observer. This is acceptable but you should be standing by to ensure its accuracy and in case there are questions or messages. If you do not get through on your first try, try two more times, waiting a couple of minutes between calls. If still no contact, try again later in an hour or two. If you do not get through on Monday, continue trying on Tuesday, Wednesday, and then Thursday. If on Thursday, you have not made contact with KWL-48, Honolulu, call the PIRO Observer Programs collect at (808) 973-2937 using a commercial radio-telephone service.

Keep in mind that due to daily solar activity, lower frequencies work better during early morning and late afternoon, while higher frequencies work better during mid-day.

To hail the Honolulu Port Field Station, speak clearly:

> **K-W-L 48, K-W-L 48, K-W-L 48, Honolulu, this is (name of the vessel spoken 3 times) followed by the vessel's call sign**. If there is a lot of static on the channel, you may need to say "Kilo-Whiskey-Lima" instead the letters "KWL" when hailing the Observer Program in Honolulu.
>
> Be sure to allow at least one minute between attempts and be careful not to "step on" other users on the frequency. FCC monitoring stations listen for infractions and issue citations.

After hailing, be alert to hear the station: **(name of the vessel spoken 3 times) and the call sign followed by this is K-W-L 48, K-W-L 48, K-W-L 48, Honolulu**.

If you hear KWL 48 calling your vessel, please respond and try to establish contact. After contact is established, identify yourself (your first name is sufficient) and ask if the base station is ready to receive your data. If you don't get a response after hailing the base station three times, wait several minutes. Then broadcast your radio report, line by line anyway. Occasionally we are able to hear observers calling in, but they are unable to hear a response from the program office.

DO NOT SAY THE POSITION OF THE VESSEL
When making a radio report to the Honolulu Port Field Station, or talking to anyone else on the SSB.

When the base station is ready, transmit the lines of data, reading each horizontal line in numerical order. Listen after each line as the base station radio operator confirms the transmission. For example, if line one was **4760**, you would say, **"Line one, four, seven, six, zero; forty-seven, sixty, over."** KWL 48 Honolulu would respond, **"Roger, copy line one, four, seven, six, zero; forty-seven, sixty, over."**

After transmitting all five lines, ask if you have any questions about your duties. Also ask if there are any messages for you. During decoding of the report, your status will be determined and appropriate action taken. If no contact is made after three attempts, try again at a later time or on another frequency.

Remember, when calling in, try not to tie up the radio with idle "chit-chat", other observers may be waiting to call in. Also, it is not permitted to transmit music or communications containing obscene, indecent, or profane words, language, or meaning. Using standard procedure words, such as **"over"**, **"roger"**, and **"out"** is good operating practice. When communications are difficult due to noise or weak signals, you can avoid confusion over words by spelling them out using the standard phonetic alphabet that follows.

☆☆☆Radio Distress Procedure☆☆☆

In case it is necessary to transmit an emergency radio distress signal, it is important that the following procedure is used. Most single side band radios have a small red button that automatically switches the radio to the emergency broadcasting frequency and transmits an alarm signal. If not, then it will be necessary to manually switch to **2182 MHz** or **4125 MHz** on single side band radios (SSB) or to **Channel 16 on VHF** radios. A radio distress signal may be sent by depressing the key button on the microphone and following the steps below.

1. **Say "MAY-DAY" 3 X**

2. **Say "This is the [Vessel name] 3 X** (and radio call sign)

3. **Say the Location of vessel.** (Lat / Lon coordinates, if possible)

4. **Say Nature of distress.**

5. **Say Number of persons on board.** (state number of injured and types of injuries)

6. **Say a Description of the vessel.** (include vessel type, length and color)

Standard Phonetic Alphabet

Letter	Word	Pronunciation
A	Alfa	AL FAH
B	Bravo	BRAH VOH
C	Charlie	CHAR LEE
D	Delta	DELL TAH
E	Echo	ECK OH
F	Foxtrot	FOKS TROT
G	Golf	GOLF
H	Hotel	HOH TELL
I	India	IN DEE AH
J	Juliette	JOO LEE ETT
K	Kilo	KEY LOW
L	Lima	LEE MAH
M	Mike	MIKE
N	November	NO VEM BER
O	Oscar	OSS CAR
P	Papa	PA PAH
Q	Quebec	KWE BECK
R	Romeo	ROW ME OH
S	Sierra	SEE AIR RAH
T	Tango	TANG GO
U	Uniform	YOU NEE FORM
V	Victor	VIK TUR
W	Whiskey	WISS KEY
X	X-ray	ECKS RAY
Y	Yankee	YANG KEY
Z	Zulu	ZOO LOO

Radio Report Sheet: Example

LONGLINE RADIO REPORTING WORKSHEET ONE

	A	B	C	D
( )	DEP / ARR MONTH		DEP / ARR HOUR	STATUS
( )				
( )	TURTLE SPEC	BIRD SPEC	MM SPEC	FISH SPEC
( )	DEP / ARR DAY			DEP / ARR MINUTES
( )			DEP / ARR	

OBSERVER NAME:
VESSEL NAME:
CALL SIGN:
CRUISE NUMBER:

PERSONAL STATUS	
0 =	I'M OK, WORK OK
1 =	I'M OK, WORK ROUGH, WORKABLE
2 =	I'M OK, WORK NOT OK, WORKABLE
3 =	I MAY NOT BE OK, WORK NOT OK
4 =	I'M NOT OKAY, WORK NOT OK

RADIO REPORTING SUMMARY

DATE	TIME	FREQ.	NOTES

Specimen Type Codes
0 = None
1 = Whole animal
2 = Skin plug
3 = Skin plug & Whole
4 = Other parts

Dep / Arr Codes
1 = Departure
2 = Arrival
3 = Mid-Cruise

Satellite Phone Protocols

Usage

I. Phone PIRO office at vessel departure with notification of the assigned satellite phone number.

II. Do not use your satellite phone for weekly radio reports if there is nothing noteworthy to report. Should contact with NMFS be required (questions, incidents, or reporting a take), use the radio first, then satellite phone only if a response is required.

a. In the case of a protected species interaction or rare sighting, use your satellite phone to contact PIRO staff as soon as possible. See instructions on what should be included when reporting a sea turtle interaction on page 18-10.

b. In the case of after office work hours, or weekends, leave a message on the office phone delivery system using the phone number list in the Numbers section below. Be sure to check your phone for messages in response.

III. Reports on the satellite phone do not need to be encoded unless privacy/intimidation are an issue. In these cases utilize the radio report worksheet codes.

DIALING

I. To unlock the phone for use, enter the PIN # 1111.

II. To dial out, dial: 00+ 1 + Area Code + Phone Number

III. Your primary contact is **Kevin Busscher @ 808-944-2215**, secondary contact is **Rich Kupfer @ 808-944-2236**

IV. In addition, if you are calling in due to a vessel or personal emergency, please contact your port coordinator.

V. Your satellite phone # is listed on the antennae of the unit. This is for incoming calls from NMFS staff, NWO staff, or other emergency personnel, **no exceptions**.

EMERGENCY – !!! CALL USCG SEARCH AND RESCUE FIRST !!!

Distress procedures remain unchanged with the following exception:
The satellite phone is to be used in **addition** to the radio and distress beacons.

NUMBERS

USCG Search & Rescue - (808) 541-2500 Speed dial #1 (hold 1)

Emergency PIROP #'s

PIRO	(808)973-2937
Kevin Busscher	808) 944-2215
Kevin Cell	(808) 542-3032
Joe Arceneaux	(808) 944-2216
Joe's Cell	(808) 754-4213
John Kelly	(808) 944-2202
John's cell	(808)351-3024
John's Home	(808) 230-2027
Dawn Golden	(808) 944-2250
Jeremy Bisson	(808) 944-2251
Keith Davis	(808) 944-2252
Eric Forney	(808) 944-2254
Lesley Jantz	(808) 944-2253
Rich Kupfer	(808) 944-2236
Tom Swenarton	(808) 944-2255

Instructions for Reporting Sea Turtle Interactions

All sea turtle interactions should be reported immediately. The report should be done using the issued satellite phone. When reporting sea turtle interactions, include the species, disposition, trip number, interaction date, the position, whether the turtle was hooked or entangled, and the severity of the hooking. For reporting the severity of the hooking, use the hooking categories on the Sea Turtle Biological Data Form. They are as follows:

01 - ingested, (in esophagus)
02- head/beak/mouth
03- wing/front flipper
04- body/shell
05- unknown
06- tail
07- leg/foot//rear flipper

In addition, please include descriptive details about the hooking such as how the hook was removed or injuries to the turtle.

Chapter 19 Equipment List

Form holder: Used as a clipboard and stores extra forms, and pencils.

Pencils: Number two pencils are used on data forms and specimen tags.

Data Forms: The forms are printed on waterproof paper.

Click counters: Hand held counters are used to keep count of the numbers of floats and hooks during the haul back.

Tape measure: Used to collect all curvilinear morphometric data on sea turtles, marine mammals, and billfish.

Measuring stick: Used with moveable caliper jaws to collect all linear morphometric data on sea turtles, billfish, sharks, tunas, and some parts of fishing gear.

Whetstone: Used to maintain a sharp cutting edge on the dissection knife.

Knife: The knife is a sturdy, stainless steel boning knife used in dissections.

Plastic bags: Small Whirlpacks© bags are used to collect swordfish and tuna gonads in formalin. The medium size bags are used to collect swordfish anal fins and stomach. The large trash bags are used in conjunction with burlap bags to retrieve whole turtle specimens

Vials: For storing otoliths or other small sized samples

Cable ties: Cable ties are used to tie off fish stomachs and secure specimen tags to samples.

Specimen tags: Tags are used to label specimens whether whole animals, tissue, or anal spine samples.

Field guides: To assist with species identification; **stow inside, out of the weather if possible.**

Duffel & Cargo bags: Used to transport and store observer gear.

Safety and Rain gear: Observers are issued an Immersion Suit and a Type I PFD for use when vessel safety is in jeopardy. Both are equipped with emergency strobe lights. Observers are also issued rain gear, boots, and gloves (rubber & cloth)

EPIRB: An Emergency Position Indicating Radio Beacon is issued to each observer.

Camera: A camera is issued for photographing hooked or entangled protected species and animals which cannot be identified or brought back for positive identification.

5 gal. bucket: Used to store and transport the observer's specimens and some sampling gear.

Binoculars: A pair of binoculars is supplied to aid the observer in marine mammal and sea turtle sightings and identification.

Watch: Issued, if the observer doesn't have a watch.

Vernier calipers: Used to measure mainline and branch line diameters.

Tissue forceps: For handling otoliths and other small samples.

Gear Maintenance

It is the observer's responsibility to maintain issued gear.

►Seawater promotes corrosion and deterioration. Routine use of light machine oil or WD-40 on the metal and moving parts of your equipment will keep it in operating condition. **Please use them.**

►Keep caliper jaws and meter sticks clean and dry. Lubricate the caliper wing nuts with light machine oil. Calibrate with the measuring tape and adjust the stationary end of the caliper jaws as necessary.

►Tape measures and calipers should be rinsed and wiped dry.

►Life jackets, clipboards, and knives should all be cleaned with soap and fresh water and dried thoroughly.

►Foul weather gear can be washed in cold water on gentle cycle and line dried.

►Inspect the immersion suit, lubricate its zipper and test strobe light before every trip.

►Rinse the knife handles with fresh water after each use to prevent corrosion.

►should be sharpened routinely at sea and at the conclusion of each trip.

►Used collection bags, ties, and gloves should be discarded properly after use.

►Identification guides and other paper goods should be wiped dry and kept inside.

►Securely tighten the lids on all vials.

►Keep camera and binoculars dry. If binoculars are exposed to salt water, wipe them with fresh water.

►If any piece of equipment becomes unusable, return it for a replacement.

Chapter 20 **Species Codes List**

COMMON NAME	CODE	SCIENTIFIC NAME
	FISH	
Barracuda, Great	**131**	*Sphyraena barracuda*
Billfish, Unidentified	**089**	Billfishes (Xiphiidae & Istiophoridae)
Bonito, Pacific	**003**	*Sarda chiliensis*
Bony Fish, Other Identified	**910***	Osteichthyes
(*For instances when you are able to identify a species of fish, but it is not included in this list of codes. Record the English common name of the fish and enter 910 in the space for the species code.)		
Bony Fish, Unidentified	**700**	Osteichthyes
Crestfish	**906**	*Lophotus lacepede*
Dolphinfish	**914**	*Coryphaena hippurus*
Dolphinfish, Pompano	**913**	*Coryphaena equiselis*
Dogfish, Velvet	**097**	*Scymnodon sqamulosis*
Driftfish	**059**	Nomeidae (*Cubiceps spp.*)
Escolar, (Smith's)	**013**	*Lepidocybium flavobrunneum*
Escolar, Longfin (Black mackerel)	**054**	*Scombrolabrax heterolepsis*
Escolar, Roudi's	**056**	*Promethichthys prometheus*
Flyingfish	**445**	Exocoetidae
Hammerjaw	**472**	*Omosudis lowei*
Jack, Cottomouth	**042**	*Uraspis spp.*
King-of-Salmon	**912**	*Trachipterus altivelis*
Lancetfish, Longnose	**909**	*Alepisaurus ferox*
Lancetfish, Shortnose	**905**	*Alepisaurus brevirostris*
Louvar	**191**	*Luvarus imperialis*
Manta-Mobula, unidentified	**129**	Mobulidae
Manta ray, Giant	**132**	*Manta birostris*

Mobula (a.k.a. Devil ray)	**133**	*Mobula spp.*
Mackerel, Bullet	**019**	*Auxis rochei*
Mackerel, Jack	**055**	*Trachurus symmetricus*
Mackerel, Pacific	**051**	*Scomber japonicus*
Marlin, Striped	**092**	*Tetrapturus audax*
Marlin, Blue	**093**	*Makaira mazara*
Marlin, Black	**090**	*Makaira indica*
Mola, Common (Ocean sunfish)	**292**	*Mola mola*
Mola, Sharptail	**294**	*Masturus lanceolatus*
Mola, Slender	**298**	*Ranzania laevis*
Needle Fish, Gaping	**474**	*Ablennes hians*
Oarfish	**911**	*Regalecus glesne*
Oilfish	**014**	*Ruvettus pretiosus*
Opah	**467**	*Lampris guttatus*
Pomfret, Brama	**903**	*Brama spp. (B. orcini & B. japonica)*
Pomfret, Lustrous (Brilliant)	**918**	*Eumegistus illustris*
Pomfret, Sickle	**908**	*Taractichthys steindachneri*
Pomfret, Dagger	**907**	*Taractes rubescens*
Pomfret, Rough	**904**	*Taractes asper*
Puffer, Pelagic	**293**	*Lagocephalus lagocephalus*
Rainbow Runner	**058**	*Elagatis bipinnulatus*
Ray, Other Identified	**919**	Rajiformes
Ray, Unidentified	**170**	Rajiformes
Remora/Suckerfish	**127**	Echeneidae
Ribbonfish, Scalloped	**902**	*Zu cristatus*
Ribbonfish, Tapertail	**901**	*Trachipterus fukuzakii*
Sailfish	**095**	*Istiophorus platypterus*
Scabbardfish, Razorback	**053**	*Assurger anzac*
Scad, Mackerel	**296**	*Decapterus macarellus*
Scad, Bigeye	**297**	*Selar crumenophthalmus*

Shark, Basking	**156**	*Cetorhinus maximus*
Shark, Bigeye Thresher	**147**	*Alopias superciliosus*
Shark, Bignose	**944**	*Carcharhinus altimus*
Shark, Blacktip	**149**	*Carcharhinus limbatus*
Shark, Blacktip Reef	**948**	*Carcharhinus melanopterus*
Shark, Blue	**167**	*Prionace glauca*
Shark, Common Thresher	**155**	*Alopias vulpinus*
Shark, Cookie Cutter	**136**	*Isistius brasiliensis*
Shark, Crocodile	**143**	*Pseudocarcharias kamoharai*
Shark, Galapagos	**947**	*Carcharhinus galapagensis*
Shark, Gray Reef	**137**	*Carcharhinus amblyrhynchos*
Shark, Longfin Mako	**938**	*Isurus paucus*
Shark, Megamouth	**192**	*Megachasma pelagios*
Shark, Oceanic White-Tip	**138**	*Carcharhinus longimanus*
Shark, Other Identified	**935***	Chondrichthyes

(*For instances when you are able to identify a species of shark, but it is not included in this list of codes. Record the English common name of the shark and enter 935 in the space for the species code.)

Shark, Pelagic Thresher	**148**	*Alopias pelagicus*
Shark, Salmon	**942**	*Lamna ditropis*
Shark, Sandbar	**943**	*Carcharhinus plumbeus*
Shark, Scalloped Hammerhead	**949**	*Sphyrna lewini*
Shark, Shortfin Mako	**151**	*Isurus oxyrinchus*
Shark, Silky	**139**	*Carcharhinus falciformis*
Shark, Smooth Hammerhead	**158**	*Sphyrna zygaena*
Shark, Tiger	**142**	*Galeocerdo cuvieri*
Shark, Unidentified	**936**	Chondrichthyes
Shark, Unid. Hammerhead	**157**	*Sphyrna spp.*
Shark, Unid. Mako	**939**	*Isurus spp.*
Shark, Unid. Thresher	**937**	*Alopiidae spp.*
Shark, White	**096**	*Carcharodon carcharias*
Snake Mackerel	**295**	*Gempylus serpens*
Spearfish, Shortbill	**094**	*Tetrapturus angustirostris*
Stingray, Pelagic	**193**	*Dasyatis violacea*
Swordfish	**091**	*Xiphias gladius*
Triggerfish, Unidentified	**291**	Balistidae
Triggerfish, Rough (a.k.a. Pelagic)	**290**	*Canthidermis maculata*
Tuna, Albacore	**005**	*Thunnus alalunga*
Tuna, Bigeye	**916**	*Thunnus obesus*

Tuna, Pacific Bluefin	**004**	*Thunnus orientalis*
Tuna, Skipjack	**002**	*Katsuwonus pelamis*
Tuna, Kawakawa	**009**	*Euthynnus affinis*
Tuna, Unidentified	**006**	Tunas (tribe: Thunnini)
Tuna, Yellowfin	**001**	*Thunnus albacares*
Wahoo	**057**	*Acanthocybium solandri*
Yellowtail	**040**	*Seriola lalandei*

SEABIRDS

Albatross, Black-Footed	**dNG**	*Phoebastria nigripes*
Albatross, Laysan	**dIM**	*Phoebastria immutabilis*
Albatross, Short-tailed	**dAL**	*Phoebastria albatrus*
Albatross, Unidentified	**dSP**	*Phoebastria spp.*
Alcid, Unidentified	**aSP**	Alcidae
Bird, Unidentified	**aVE**	Aves
Bird, Other Identified	**aVO***	Aves

(*For instances when you are able to identify a species of bird, but it is not included in this list of codes. Record the English common name of the bird and enter aVO in the space for the species code.)

Booby, Brown	**sLP**	*Sula leucogaster plotus*
Booby, Masked	**sDP**	*Sula dactylatra personata*
Booby, Red-Footed	**sSR**	*Sula sula rubripes*
Cormorant, Brandt's	**pPN**	*Phalacrocorax penicillatus*
Cormorant, Double-crested	**pAU**	*Phalacrocorax auritus*
Cormorant, Pelagic	**pPL**	*Phalacrocorax pelagicus*
Cormorant, Unidentified	**pSP**	*Phalacrocorax spp.*

SEA TURTLES

Turtle, Green/Black	**CM**	*Chelonia mydas / C. agassizi*
Turtle, Hawksbill	**EI**	*Eretmochelys imbricata*
Turtle, Leatherback	**DC**	*Dermochelys coriacea*
Turtle, Loggerhead	**CC**	*Caretta caretta*
Turtle, Olive Ridley	**LV**	*Lepidochelys olivacea*
Turtle, Unidentified	**UT**	Testudines
Turtle, Unidentified Hardshell	**UH**	Chelonidae (non-Leatherback)

MARINE MAMMALS

Beaked Whale, Baird's	**BD**	*Berardius bairdii*
Beaked Whale, Blainville's	**MD**	*Mesoploson densirostris*
Beaked Whale, Cuvier's	**ZI**	*Ziphius cavirostris*
Beaked Whale, Mesoplodont	**UM**	*Mesoplodon spp.*
Beaked Whale, Unidentified	**ZU**	Ziphiidae
Cetacean, Unidentified	**UC**	Cetacea
Dolphin, Bottlenose	**TT**	*Tursiops truncatus*
Dolphin, Unidentified Common	**DD**	*Delphinus sp.*
Dolphin, Long-Beaked Common	**DL**	*Delphinus capensis*
Dolphin, Short-Beaked Common	**DS**	*Delphinus delphis*
Dolphin, Fraser's	**LH**	*Lagenodelphis hosei*
Dolphin, N. Right Whale	**LB**	*Lissodelphis borealis*
Dolphin, Pac. White-sided	**LO**	*Lagenorhynchus obliquidens*
Dolphin, Risso's	**GG**	*Grampus griseus*
Dolphin, Rough-toothed	**SB**	*Steno bredanensis*
Dolphin, Spinner	**SL**	*Stenella longirostris*
Dolphin, Spotted	**SA**	*Stenella attenuata*
Dolphin, Striped	**SC**	*Stenella coeruleoalba*
Dolphin, Unidentified	**UD**	Delphinidae
Porpoise, Dall's	**PD**	*Phocoenoides dalli*
Porpoise, Harbor	**PP**	*Phocoena phocoena*
Porpoise, Unidentified	**UP**	Phocoenidae
Whale, Blue	**BM**	*Balaenoptera musculus*
Whale, Bryde's	**BE**	*Balaenoptera edeni*
Whale, Fin	**BP**	*Baleanoptera physalus*
Whale, Gray	**ER**	*Eschrichtius robustus*
Whale, Humpback	**MN**	*Megaptera novaeangliae*
Whale, Killer	**OO**	*Orcinus orca*
Whale, False Killer	**PC**	*Pseudorca crassidens*
Whale, Pygmy Killer	**FA**	*Feresa attenuata*
Whale, Melon-headed	**PE**	*Peponocephala electra*
Whale, Minke	**BA**	*Balaenoptera acutorostrata*
Whale, Sei	**BB**	*Balaenoptera borealis*
Whale, Short-finned Pilot	**GM**	*Globicephala macrorhynchus*
Whale, Sperm	**PM**	*Physeter macrocephalus*
Whale, Pygmy Sperm	**KB**	*Kogia breviceps*
Whale, Dwarf Sperm	**KS**	*Kogia simus*
Whale, Unidentified Kogia	**UK**	*Kogia sp.*
Whale, Unidentified	**UW**	Cetacea

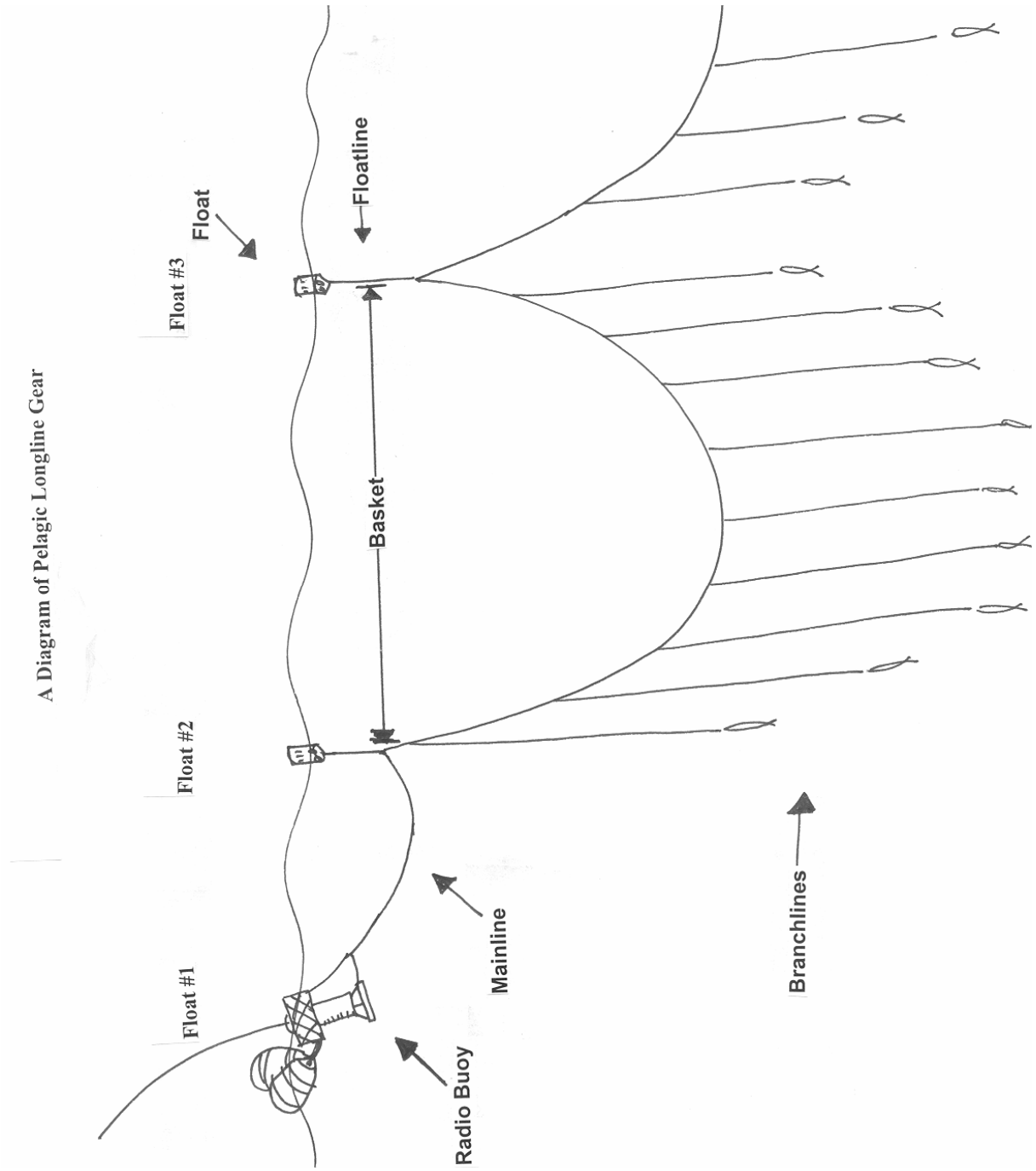
Fur Seal, Guadalupe	**AT**	*Arctocephalus townsendi*
Fur Seal, Northern	**CU**	*Callorhinus ursinus*
Fur Seal, Unidentified	**UA**	Arctocephalinae
Pinniped, Unidentified	**PU**	Pinnipedia
Sea Lion, California	**ZC**	*Zalophus californianus*
Sea Lion, Steller	**EJ**	*Eumetopias jubatus*
Sea Lion, Unidentified	**UO**	Otariinae (Eared seals)
Seal, Harbor	**PV**	*Phoca vitulina*
Seal, Hawaiian Monk	**MS**	*Monachus schauinslandi*
Seal, Northern Elephant	**MA**	*Mirounga angustirostris*
Seal, Unidentified	**US**	Phocidae (True seals)

Chapter 21 Appendices

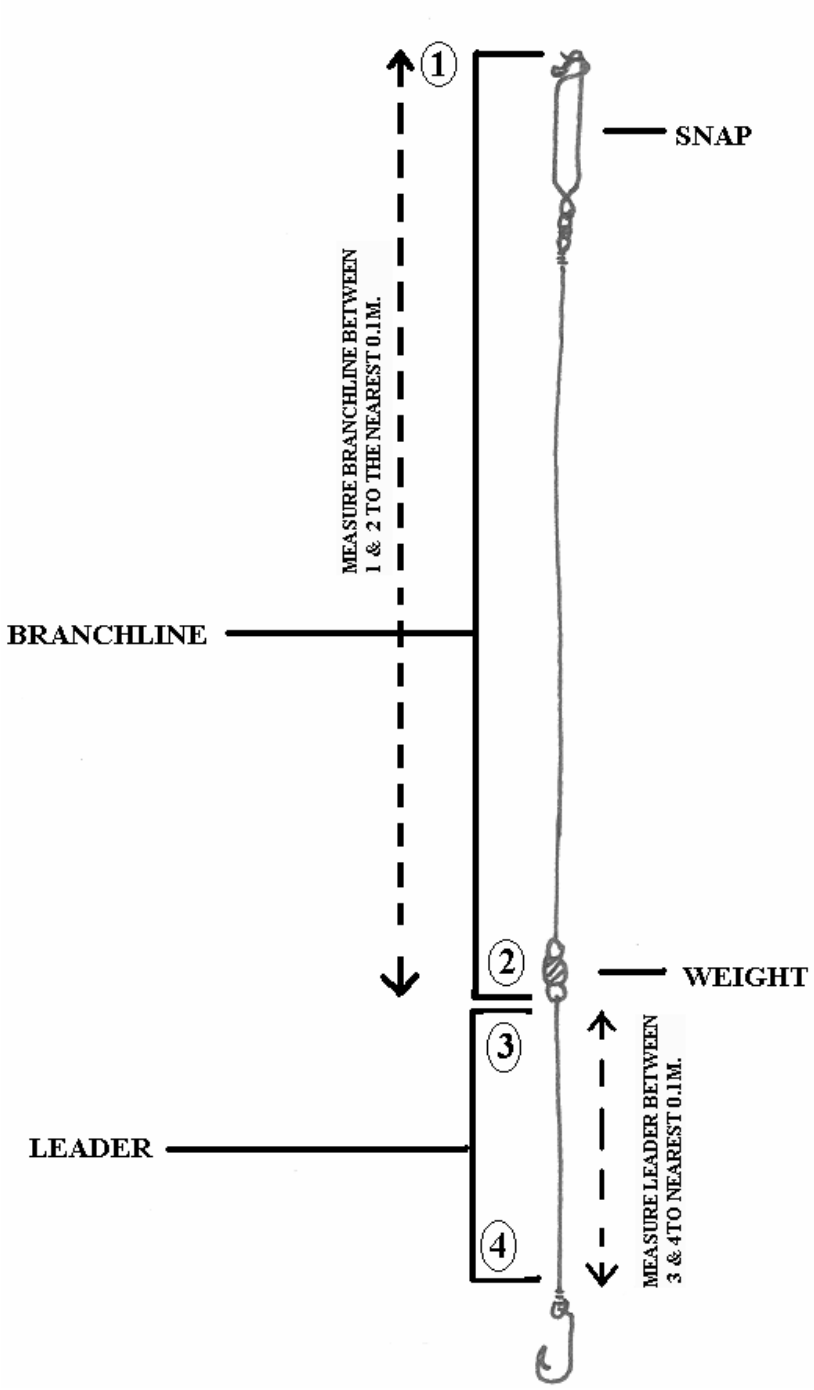
The appendices include the following:

- **Longline diagram.**
- **Dropperline diagram.**
- **Protocol for Collecting Sea Turtle Skin Biopsies.**
- **Cetacean Skin Biopsy Protocol. (incl. reference for filling out the Marine Mammal Life History Form and disentanglement guidelines)**
- **Fish Sampling Protocols**
- **Procedure for Attaching Pop-Up Satellite Tags.**
- **Instructions for attaching flipper tags (reference for filling out the Sea Turtle Life History Form)**
- **Longline hook size reference.**
- **Longline hook style reference.**
- **Temperature & Length Conversion Formulas**
- **Fahrenheit –Celsius Conversion Chart**
- **Directions for USFWS 3-177 and CITES Import forms**
- **Observer related regulations from 50 CFR part 600**
- **General Fish Anatomy diagrams**
- **Shark sexing diagrams**

Longline Diagram



Branchline Diagram



♦Points1 and 2 indicate the points to measure to obtain the branchline length.

♦Points3 and 4 indicate the points to measure to obtain the leader length.

♦The branchline diameter is obtained by measuring the diameter of the line anywhere between the snap and the weight.

Protocol For Collecting Sea Turtle Skin Biopsies

Category A: Sampling a live sea turtle brought aboard the vessel.

1. Turtles are always to be protected from temperature extremes of heat and cold, and kept moist during sampling. Place the turtle on a disinfected pad for cushioning. (Disinfect the pad again after use) The area surrounding the turtle should be made clear of materials that could be accidentally ingested.

2. Stabilize the turtle by turning it over and holding it still in a supine position. If available, a second person should provide assistance.

3. Using a disposable alcohol/or betadine swab, clean the skin region between the plastron and the base of the hind flippers. The skin in this area is normally soft and smooth, and devoid of hard or enlarged keratinized scales. Skin on the ventral side at the base of the hind flippers is the preferred area to biopsy. However, if for some reason it is not possible to sample this region, skin in the ventral pectoral area, at the base of the front flippers, may be used.

4. Carefully remove a new biopsy punch (Acu-Punch® brand) from its sealed wrapper. Exercise care in handling as the circular cutting end of this instrument is very sharp. Use caution by holding the cutting edge away from you and other persons at all times.

5. Hold the plastic handle of the biopsy punch [this is the hand held biopsy punch] using your thumb and index finger. Place the circular cutting end on the smooth skin dorsal of a hind flipper and rotate the punch while pressing down with moderate force. A circular cut will rapidly be made through the skin. Continue to rotate and press down to about 5-mm depth, or until the blade reaches maximum penetration. For samples taken from small turtles (<25-35 cm carapace length), cutting to a depth of only 2-3 mm, or about half the length of the steel blade, will be sufficient.

6. Withdraw the biopsy punch [this is the hand held biopsy punch] from the skin by lifting it straight out. Use forceps to grasp and remove the thin circular plug of skin resulting from the cut made with the biopsy punch. The plug may momentarily adhere to the underlying tissue, but will easily detach when lifted away.

7. Immediately place the plug of skin in a designated container (Whirl-pak™)containing purified granular salt (NaCl). Using another disposable alcohol/or betadine swab clean around and inside the region of the turtle from which the skin plug was taken. Shake the container for several seconds after placing the skin sample inside, to make sure the sample is covered by the salt. Label the container with the date, the turtle's flipper tag number, and/or any other unique identifying information available for the turtle. These data should correspond with information entered in your observer's logbook.

8. Using the same biopsy punch [this is the hand held biopsy punch], obtain a second disk of skin from the turtle, but from the opposite hind flipper region. This should be accomplished by repeating the procedures listed in Steps 1-6. Place the second plug of

skin in the same container (Whirl-pak™). Again, using another disposable alcohol/or betadine swab clean around and inside the region of the turtle from which the skin plug was taken. Store the container in a secure location reserved for valuable scientific specimens.

8. When both skin samples have been obtained, immediately return the biopsy punch [this is the hand held biopsy punch] to its protective wrapper and mark the package as "**USED"**. Return it to the PIRO Observer Programs for proper disposal. Additional new biopsy punches have been supplied to each observer; therefore, the same punch should not never be used to obtain skin samples from another turtle.

The forceps used to grasp the skin plug must always be thoroughly cleaned of any adhering tissue and rinsed with 90% alcohol after each turtle is sampled.

9. The turtle should be released in an appropriate and safe manner after all pertinent data have been collected and the turtle has been tagged. No special treatment of the biopsy site is necessary prior to release. Slight bleeding may occur, but this will cease shortly after the turtle has been returned to the ocean.

Category B: Sampling a dead sea turtle brought aboard the vessel.

1. Follow the same protocol as described above for a living turtle (Category A, Steps 1-8).

2. Be certain that the turtle is, in fact, dead prior to freezing it for transport to a National Marine Fisheries Service Honolulu Laboratory. A comatose but live sea turtle may, in some cases, exhibit absolutely no movement or signs of life. In other cases, an unconscious turtle may show some evidence of eyelid or tail movement when touched. A turtle that shows no signs of life after 4 hours on deck (held in the shade where further damage to it won't occur) may be safely considered as dead.

Category C: Sampling a large sea turtle dead or alive in the water alongside the vessel that has been hooked or entangled.

1. The sampling gear consists of a 10' pole with a threaded adapter securely fixed to one end. The threads have silicon grease on them and are fitted with a protective rubber sheath that can be easily removed. Each pole comes with a corer. This is a small stainless steel cutting tool with prongs extending from the inner surface to entrap the tissue once coring has occurred. Each corer is stored in a small ziplock bag. The bag also contains a vial of salt (NaCl) solution.

2. When a large turtle is hauled in alongside a vessel and is available to sample, the corer should be threaded to the adapter. A forceful jab should be made to ensure full penetration by the corer. Suitable sampling sites include anywhere on the flippers, shoulders, and pectoral and pelvic regions. The depth of the corers (1cm) is such that no permanent damage will result if a strike to the carapace is made. For leatherbacks, the

somewhat soft nature of the carapace will allow sampling of tissue that will be entirely suitable for DNA analysis. We do not want the carapace targeted, but if a tissue core is taken from this area, the sample can be successfully used to extract DNA.

4. The corer should be unscrewed once the pole is brought back on deck. Care should be taken not to strike a crewmember while swinging the 10' pole aboard. Once unscrewed, the entire corer with tissue inside should be placed into the vial containing the salt solution and properly labeled. Do not attempt to remove the tissue from the corer. Only one sample can be collected with each corer.

From instructions by:

George Balazs
Marine Turtle Research Program
NMFS Pacific Islands Fishery Science Center

EQUIPMENT LIST

Categories A and B: Sampling a live or dead sea turtle brought aboard the vessel.

1. Alcohol swab (disposable)

2. Biopsy punch (Acu-Punch brand)

3. Forceps

4. Vial containing harmless granulated salt (NaCl)

5. Labels

6. Label marker

7. 90% alcohol

Category C: Sampling a large sea turtle dead or alive in the water along side the vessel that has been hooked or entangled.

1. Stainless steal corer

2. 10 ft pole with threaded adapter

3. Salt (NaCl) solution vial

Cetacean Skin Biopsy Collection Protocol

Equipment:

Included in your sampling kit are:
(1) stainless steel coring tips (to be mounted on the pole)
(2) plastic vials containing DMSO (Dimethyl Sulfoxide) and NaCl solution.
(3) sample labels
(4) strips of Parafilm®
(5) a Sharpie® permanent marker
(6) pencil.

Preservative:

The preservative in the vials is 20% salt saturated solution of 20% DMSO. Avoid getting DMSO on your skin.

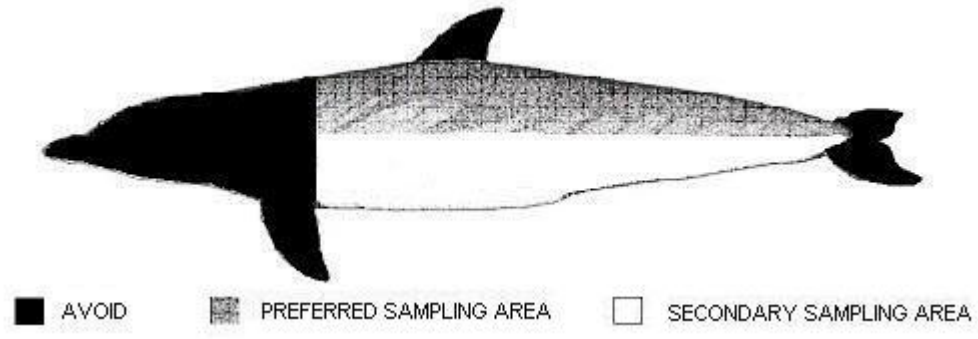
Methods:

When an entangled or hooked marine mammal comes up, work with the crew to safely get the animal close enough to obtain a biopsy sample. If the animal is agitated and vigorously swimming around, it may be difficult to get the animal within range for sample collection. If there is a significant risk of injury to the crew, the animal, or you, do not attempt to collect the sample. This is especially true in the case of larger whales. **Use your best judgement, and remember, while each sample is valuable to researchers, safety comes first.**

Use your best judgement as to when during the disentanglement / dehooking process to take your sample. For example, you may have ample opportunity to gather a sample from a dead or seriously entangled animal. However, an animal that is just hooked may be very lively, and your opportunities will be limited. You should keep your sampling equipment readily available to you. Make sure that your sampling pole is not tied down during fishing operations and can be retrieved at a moment's notice. Keep your Marine Mammal Sampling Kit on deck with you (preferably, in your bucket).

Sample Collection:
Attach the stainless steel cutting tip to your sampling pole (turtle). Thrust the cutting tip into the dorsal surface of the animal **away from the blowhole** to collect a skin sample. If the marine mammal is dead, it is okay to use a gaff to maneuver the animal into position to get the sample. If the animal is very large, you can take the sample from the back, side, belly or tail stock.

Skin samples for genetic analyses can be collected from anywhere on the body of the cetacean. Avoid trying to sample from the dorsal fin, pectoral flippers or flukes. These regions are hard and it's difficult to cut the skin. The diagram below illustrates the best areas to collect your sample from and the areas to avoid.



Once, you've collected the tissue sample, unscrew the tip from the pole and place it in the vial containing the DMSO/salt solution.

Labeling:
1) On the sample labels (*i.e.,* small pieces of bond paper), **use a pencil** to record the specimen number, species, and date collected. Insert the label into the vial with the sample.

2) Label each vial (cap and side of the vial) using the enclosed **Sharpie® Permanent Marker** with the specimen number and species name.

3) Tighten the cap securely, and wrap a strip of **Parafilm®** around the cap and the top of the vial. Stretch the **Parafilm®** as you wrap. This will prevent leaking while the sample is in transport.

4) Complete a Marine Mammal Life History Data Form with your specimen number, species identification (detail the characteristics used to make the ID), date collected and the position. A sketch or photo showing the entanglement and any obvious wounds would be very useful.

Guidelines for Disentangling Cetaceans from Longline Fishing Gear

Never enter the water in an attempt to disentangle the animal!

CAUTION: These instructions are provided to give guidance to observers encountering entangled marine mammals at sea, far from support or aid of outside personnel.

Disentangling marine mammals is a dangerous activity and should be undertaken with the utmost regard to personal safety!

Should an incident become difficult or dangerous to yourself or other vessel crew after initial attempts, **DO NOT** attempt any further disentanglement efforts; especially when dealing with actively struggling animals. As quickly as you can; document the incident as fully as your are able, collect a skin biopsy; if possible; and cut as much of the gear off the animal as possible.

Even, animals which appear dead or nearly so can suddenly sound (dive) or attempt to swim off, putting great stress on any entangling lines or gear.

Even if you were unable to remove all of the fishing gear from the animal, the information and/or samples you collected will do more good for the species, than risking life or limb to save the individual animal.

Disentangling marine mammals is a dangerous activity and should be undertaken with the utmost regard to personal safety!

9 Steps to take when disentangling cetaceans from longline gear.

1) Ask the crew to assist you by standing by with two pole gaffs.

2) Proceed cautiously and smoothly. Have the captain stop the vessel within close range and gently bring the animal alongside the vessel.

3) If there is a tangle, gaff the other side of mainline and attach it to the vessel or float. This is to isolate the vessel and the marine mammal from any tension on the remaining gear in the water. **This may be a good time to take a sample**. If possible, take a photo of the animal showing the entangling gear.

4) Do not attempt to bring a live marine mammal on board the vessel. You may cause serious injury to the animal.

5) Work tangle off the marine mammal as smoothly and quickly as possible. If the animal is alive, it is important to start unwrapping or cutting the **anterior (towards the head) most lines first.** If the vessel has a line cutter device (*e.g.* ALC or LaForce Line Cutter), use it to cut the lines. Avoid becoming entangled in bundles or loops of line attached to a live animal. The animal may suddenly dive, and cause serious injury or death by snagging clothing, a hand, a finger or other limb.

6) Avoid abrupt actions that may panic the animal.

7) When a hook is involved, if possible cut off the barb of the hook with long handled bolt cutters and remove hook. This may be nearly impossible on live animals in the water.

8) If hook removal is not possible cut the line as close to the eye of the hook as possible.

9) Remove as much line from the animal as possible. If it is not possible to remove all the line, make sure to describe what, how much, and where the remaining line is on the animal on the Marine Mammal Biological Data form. If possible take several photographs showing the entangled area and the remaining gear.

Procedure for attaching pop up satellite archival tags.

The following is a detailed procedure for the attachment of PSATs on incidentally caught hardshelled sea turtles. Observers should follow all standard protocols for handling turtles that have been hooked or entangled.

Assessment:

Once on deck, guide the turtle to a safe area, preferably out of the weather and salt spray, make sure it is in an area where the turtle will have adequate ventilation around its head.. To calm the turtle place its head in a corner. Follow the protocols for obtaining the information for the *Sea Turtle Biological Data Form* and *Catch Event Log* as well as applying the metal flipper tags, collecting skin plugs, and photographs. Make sure the photo of the PSAT includes the ID label for the tag (either from the base plate or from stickers).

Preparation:

Identify a good position on the carapace to attach the PSAT. Flat and clean scutes toward the back of the carapace generally work best. (figure 1, page 121). Use freshwater to help clean the attachment area. Scrub away algae and remove any barnacles as best you can. Use sandpaper gently, for finer cleaning. Finally, wipe the area with a clean dry cloth.

Attachment:

Have all of your supplies (including watch) available. Make sure the carapace is clean and dry before beginning attachment procedures. Put on gloves and perform the following steps as quickly as possible.

1) Open the box of Marine Fix® Fast and put the contents from both containers (A and B) into the large plastic cup. Mix thoroughly for 90 seconds using the large wooden stirrer (figure 2, page 121).
2) Using the same stirrer, apply a thick coat of the mixed epoxy to the flat bottom part of the white base plate (figure 3, page 122).
3) Place against the carapace for a few minutes to squeeze out any air pockets. Be careful not to press down too hard that too much epoxy is pushed from under the baseplate. Smooth out the excess epoxy that oozes out of the sides with the stirrer or wet (gloved) fingertip. Wait approximately 30 minutes for the epoxy to harden.
4) Take a photograph showing the transmitter attached to the carapace (figure 4, page 122).

Release the turtle back into the water from as close to the surface as possible. Be sure to record the PSAT number, the position of release, and behavior of the turtle when released in the notes section of the *Sea Turtle Life History Sheet* and *Protected Species Tally Sheet*.

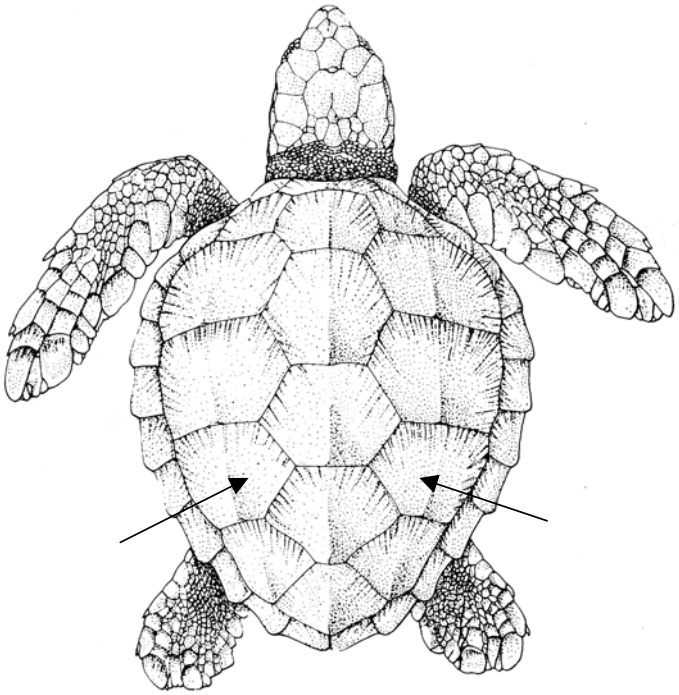


Figure 1. Attachment areas for PSAT

Figure 2. Mixing the epoxy compound. *Wear the latex gloves the handling The epoxy compound.*


Figure 3. Applying epoxy compound to PSAT baseplate.

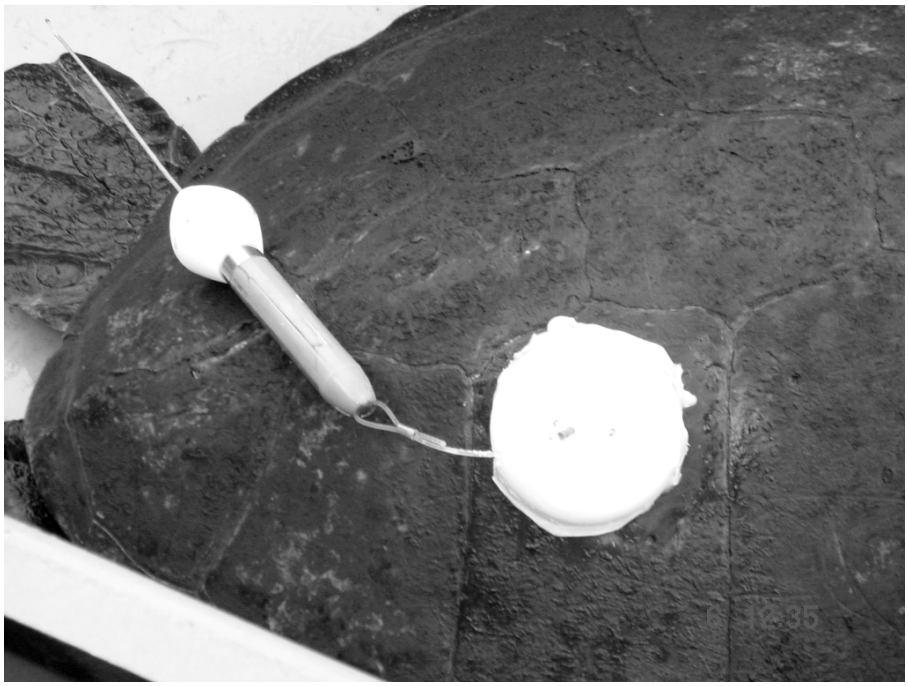


Figure 4. A properly attached PSAT.

Instructions For Applying Metal Flipper Tags On Sea Turtles

Special Conditions

All tags shall be cleaned (e.g., oil residue) and disinfected before being used. First, was the tag with soap and rinse thoroughly. Next, rinse the tag with a disinfectant. Applicators must be cleaned (and disinfected when appropriate) between animals

1: Remove a tag from the strip and record its alphanumeric number. Be careful not to bend the tag from its original shape. Peel back only enough tape to remove one or two tags at a time. If more tape is removed, the tags are liable to fall off and become lost or damaged

2: With the piercing side of the tag up, place your index finger tip inside the bend of the tag. The piercing side of the tag has the numbers stamped into it (figs. **1** & **2**).

3: Hold the tag applicator pliers in the other hand, making sure the handle with the paint mark (or label) is up. Using your index finger, pull the tag straight back into the open jaws of the applicator pliers. A firm pull will be needed to completely seat the tag into its correct position. Take care not to squeeze the applicator handles before you are ready to apply the tag. If the handles are squeezed part way, and released, the bent tag will fall out, and will not function properly (fig. **3**).

4: Locate the correct site where the tag will be applied on the trailing edge (rear) of the front flipper. Ask for assistance holding the turtle still. Make sure to position the tag so there is some overhang after it is attached to the flipper (figs. **4** & **5**).

5: Apply the tag by squeezing the applicator handles firmly. The tag point will pierce the flipper and lock into place through the other tag end. The piercing tip must be bent over completely to lock tag. The handles of the applicator must be squeezed together **very firmly** at the final point in order to fully bend the point down.

6: Repeat the procedure in the same place on the other front flipper. All turtle should be double tagged. Try to use consecutive numbers on the same turtle whenever possible. If a tag is ruined, record the number of the ruined tag, and use another tag. If the recommended tagging site cannot be used, find another site on the rear edge of the front flipper.

Adapted from instructions by G. H. Balazs
MTRP
NMFS Pacific Islands Fishery Science Center
Honolulu, HI

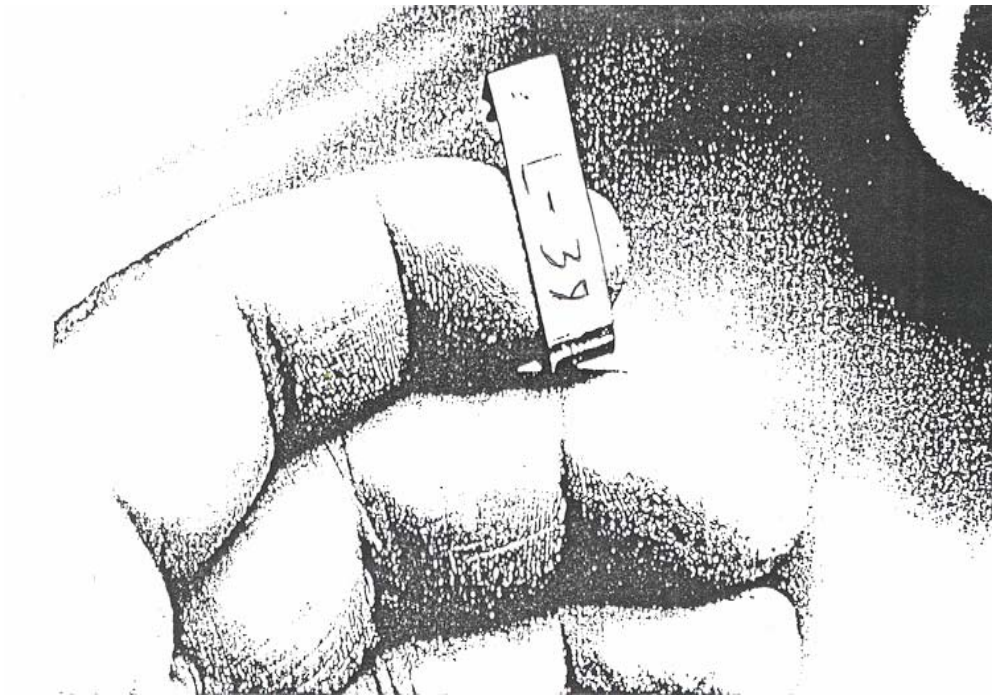


Figure 1. Holding a flipper tag in correct orientation to load into applicator. Note the numbered side of the tag is up.

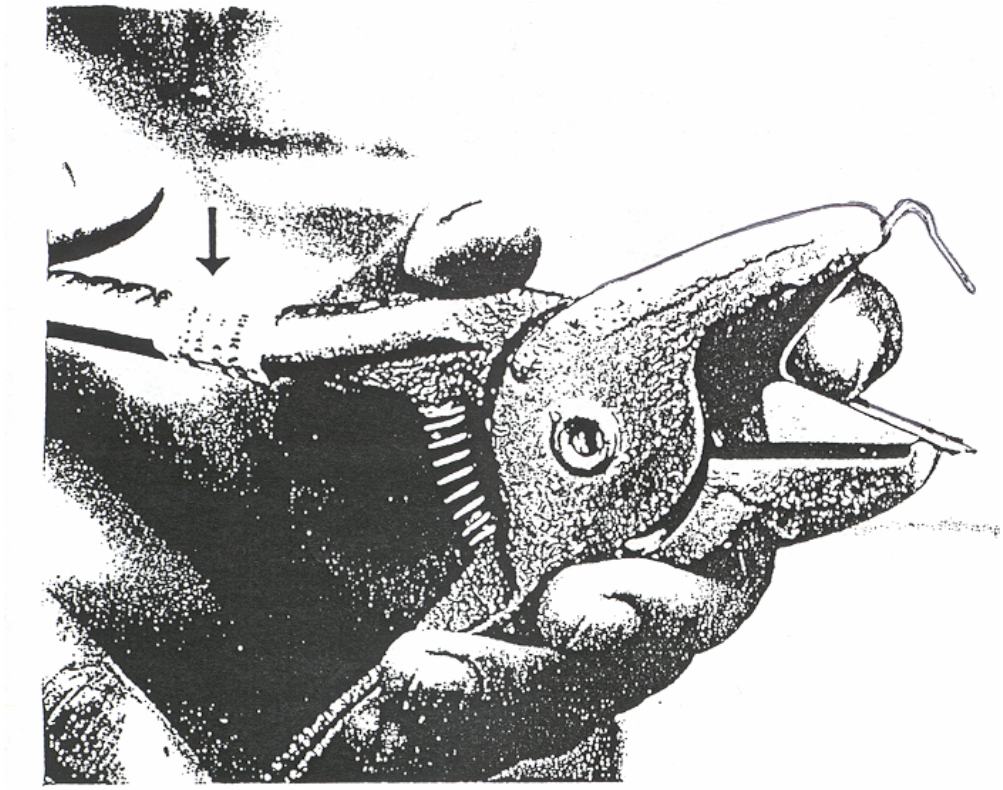


Figure 2. Loading a flipper tag into tag applicator. The arrow indicates which handle should be up.

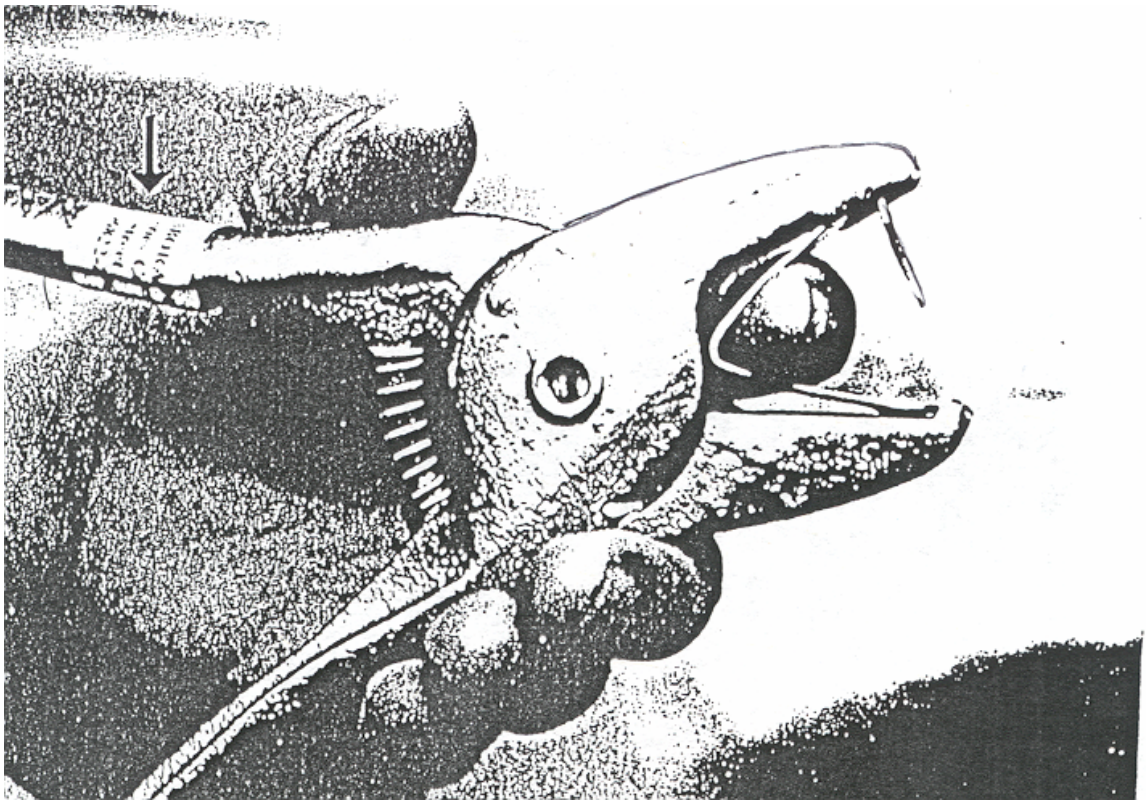


Figure 3. A fully seated tag in the tag applicator pliers.

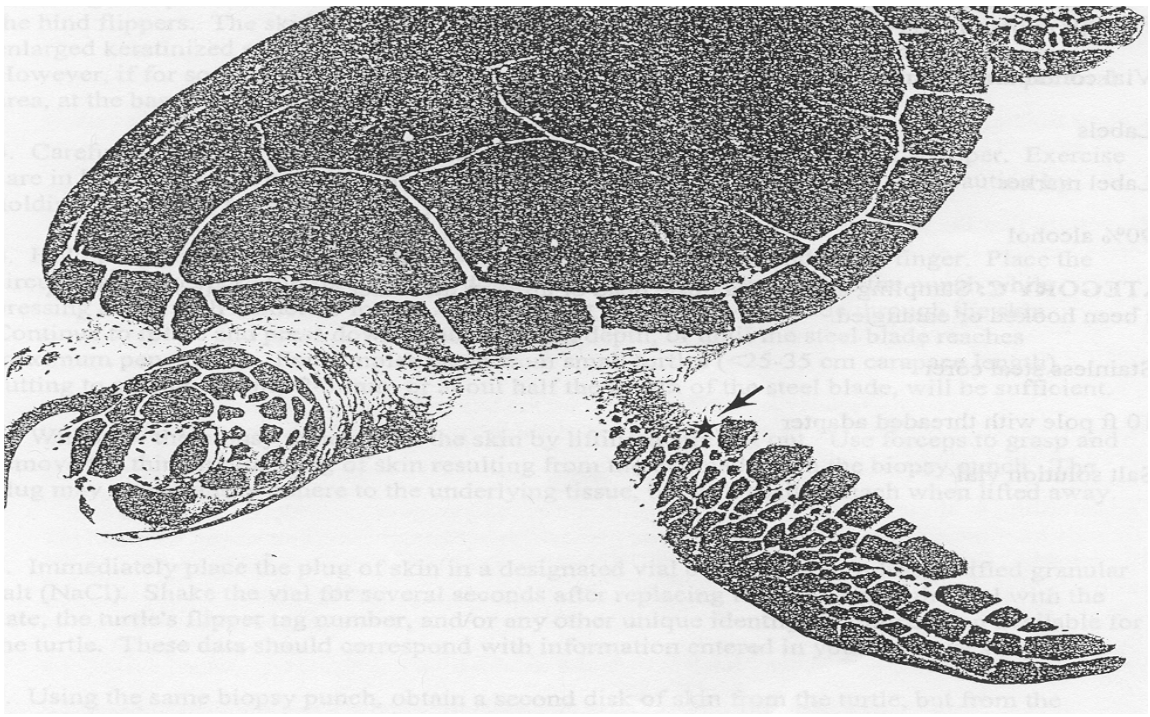


Figure 4. Arrow indicating the preferred location for flipper tag placement. The next preferred location is between the two large scales to the right of the arrow.

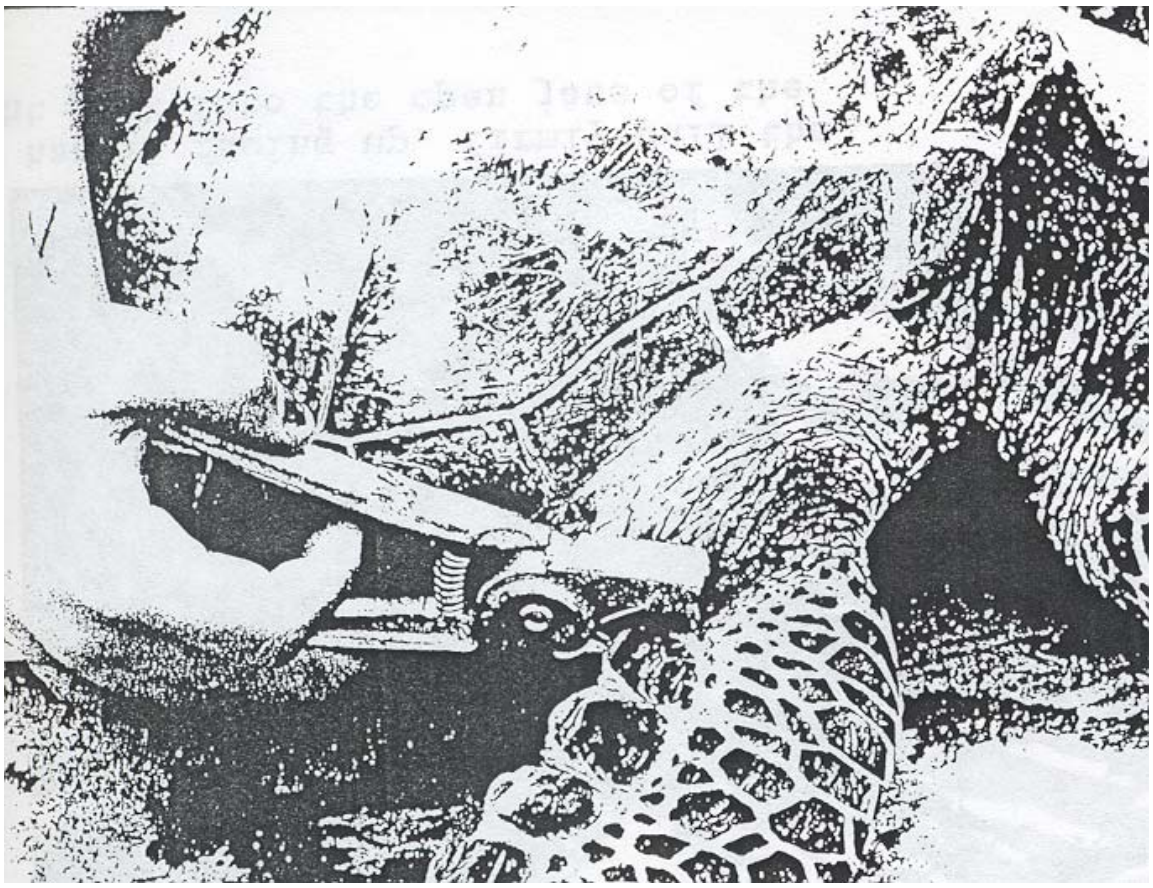


Figure 5. Applying flipper tag to a front flipper of a Green sea turtle. Note the slight gap between angle of tag and edge of flipper.

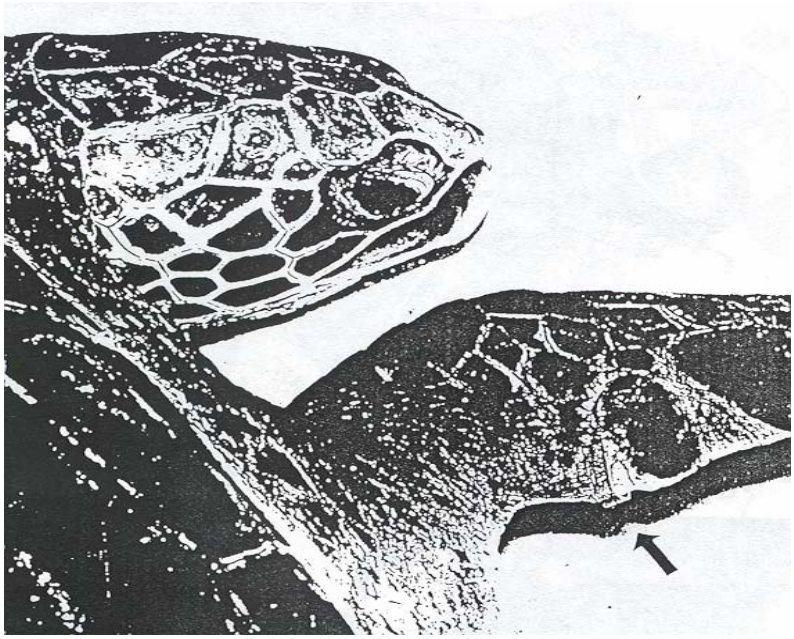
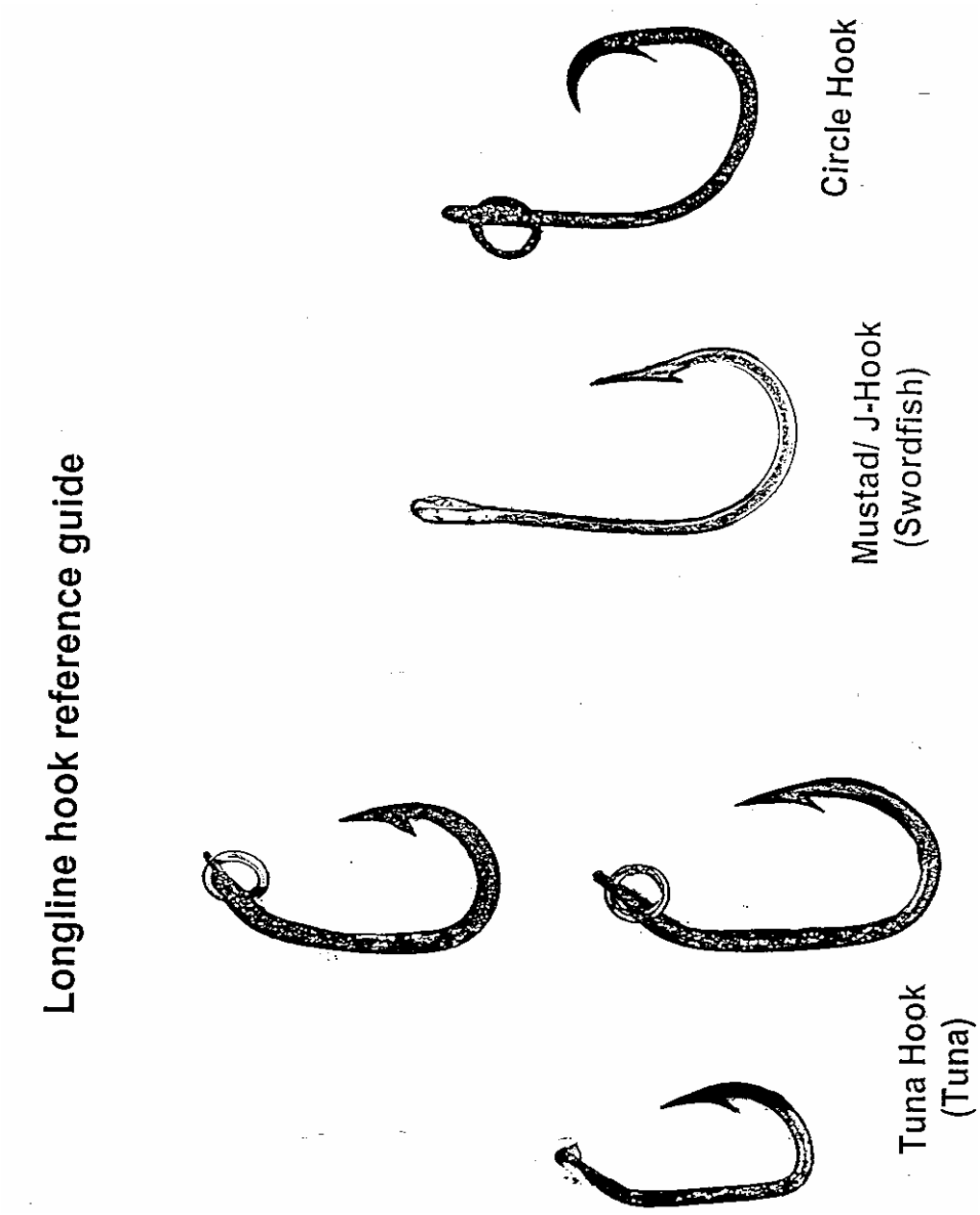


Figure 6. A properly applied flipper tag.

Longline Hook Style Reference



Conversions and Formulas

The following conversions and formulas may be useful during a cruise. If you are uncertain of any conversions, record the data in the units available near the appropriate data field. The units may then be converted once you arrive on shore at the end of the cruise. Refer to the instructions in the field manual to confirm the correct unit for the datra element in question.

Length/Depth:

1 fathom = 6 feet = 1.82 meters.

Example: 45 fm x (1.82 m/fm) = 81.9m.

Speed/Distance:

1 nautical mile = 1.1508 statute miles (mi) = 6086ft.
(1 nautical mile = 1 knot)

Example: 12kts x 1.1508 mi/kt = 13.8096 mph.

Temperature:

To get Fahrenheit,
Fahrenheit (ºF) = (ºC x 9/5) + 32
= (ºC x 1.8) + 32

Example: 17 ºC = ??? ºF
a. (17 x 1.8) +32 = ºF
b. (30.6) +32 = ºF
c. 62.6 = ºF

Solution: 17 ºC = 62.6 ºF

To get Celsius,
Celsius (ºC) = (ºF - 32) x 5/9
= (ºF - 32) x 0.555

Example: 81 ºF = ??? ºC
a. (81 ºF -32) x 0.555 = ºC
b. (49) x 0.555 = ºC
c. 27.195 = ºC

Solution: 81 ºF = 27.195 ºC

Fahrenheit-Celsius Conversion Chart

Fahrenheit to Celsius Conversions

Deg F	Deg C	Deg F	Deg C	Deg F	Deg C	Deg F	Deg C	Deg F	Deg C
0	-17.8	21	-6.1	42	5.6	63	17.2	84	28.9
1	-17.2	22	-5.6	43	6.1	64	17.8	85	29.4
2	-16.7	23	-5	44	6.7	65	18.3	86	30
3	-16.1	24	-4.4	45	7.2	66	18.9	87	30.5
4	-15.5	25	-3.9	46	7.8	67	19.4	88	31.1
5	-15	26	-3.3	47	8.3	68	20	89	31.6
6	-14.4	27	-2.8	48	8.9	69	20.5	90	32.2
7	-13.9	28	-2.2	49	9.4	70	21.1	91	32.7
8	-13.3	29	-1.7	50	10	71	21.6	92	33.3
9	-12.8	30	-1.1	51	10.5	72	22.2	93	33.9
10	-12.2	31	-0.6	52	11.1	73	22.8	94	34.4
11	-11.7	32	0	53	11.7	74	23.3	95	35
12	-11.1	33	0.6	54	12.2	75	23.9	96	35.5
13	-10.5	34	1.1	55	12.8	76	24.4	97	36.1
14	-10	35	1.7	56	13.3	77	25	98	36.6
15	-9.4	36	2.2	57	13.9	78	25.5	99	37.2
16	-8.9	37	2.8	58	14.4	79	26.1	100	37.7
17	-8.3	38	3.3	59	15	80	26.6	101	38.3
18	-7.8	39	3.9	60	15.5	81	27.2	102	38.9
19	-7.2	40	4.4	61	16.1	82	27.8	103	39.4
20	-6.7	41	5	62	16.7	83	28.3	104	40

Relevant statutes regarding data collection by NMFS

The NMFS is authorized to collect biological, economic, social and other data under the following statutes, among others;

a. Agricultural Marketing Act of 1946, 7 U.S.C. 1621-1627

b. Agricultural Trade Development and Assistance Act of 1954, 7 U.S.C. 1704

c. Anadromous Fish Conservation Act, 16 U.S.C. 757-757f

d. Atlantic Coast Fish Study for Development and Protection of Fish Resources, 1950, 16 U.S.C. 760a

e. Atlantic Tunas Convention Act of 1975, 16 U.S.C 971-971I

f. Eastern Pacific Tuna Licensing Act of 1984, 16 U.S.C. 972-972h

g. Endangered Species Act, 16 U.S.C. 1531-1543

h. Farrington Act of 1947, 16 U.S.C. 758-758d

i. Fish and Wildlife Act of 1956, 16 U.S.C. 742(a) *et seq*

j. Fish and Wildlife Coordination Act of 1934, 16 U.S.C. 661-666c

k. Fishery Market New Service Act of 1937, 50 Stat. 296

l. Fur Seal Act, 16 U.S.C. 1151-1175

m. Interjurisdictional Fisheries Act of 1986, 16 U.S.C. 4101 *et seq*

n. Magnuson-Stevens fishery Conservation and Management Act, 16 U.S.C. 1801 *et seq*

o. Marine Mammal Protection Act, 16 U.S.C. 1361 *et seq*

p. Marine Migratory Gamefish Act of 1959, 16 U.S.C. 160e

q. South Pacific Tuna Act of 1988, 16 U.S.C. 973-973n

r. Tuna Conventions Act of 1950, 16 U.S.C. 951-961

TITLE 50--WILDLIFE AND FISHERIES

DEPARTMENT OF COMMERCE

PART 600--MAGNUSON-STEVENS ACT PROVISIONS--Table of Contents

Subpart H--General Provisions for Domestic Fisheries

50 CFR Sec. 600.725 General prohibitions.

It is unlawful for any person to do any of the following:

(a) Possess, have custody or control of, ship, transport, offer for sale, sell, purchase, land, import, or export, any fish or parts thereof taken or retained in violation of the Magnuson-Stevens Act or any other statute administered by NOAA and/or any regulation or permit issued under the Magnuson-Stevens Act.

(b) Transfer or attempt to transfer, directly or indirectly, any U.S.-harvested fish to any foreign fishing vessel, while such vessel is in the EEZ, unless the foreign fishing vessel has been issued a permit under section 204 of the Magnuson-Stevens Act, which authorizes the receipt by such vessel of U.S.- harvested fish.

(c) Fail to comply immediately with enforcement and boarding procedures specified in Sec. 600.730.

(d) Refuse to allow an authorized officer to board a fishing vessel or to enter areas of custody for purposes of conducting any search, inspection, or seizure in connection with the enforcement of the Magnuson-Stevens Act or any other statute administered by NOAA.

(e) Dispose of fish or parts thereof or other matter in any manner, after any communication or signal from an authorized officer, or after the approach by an authorized officer or an enforcement vessel or aircraft.

(f) Assault, resist, oppose, impede, intimidate, threaten, or interfere with any authorized officer in the conduct of any search, inspection, or seizure in connection with enforcement of the Magnuson- Stevens Act or any other statute administered by NOAA.

(g) Interfere with, delay, or prevent by any means, the apprehension of another person, knowing that such person has committed any act prohibited by the Magnuson-Stevens Act or any other statute administered by NOAA.

(h) Resist a lawful arrest for any act prohibited under the Magnuson-Stevens Act or any other statute administered by NOAA.

(i) Make any false statement, oral or written, to an authorized officer concerning the taking, catching, harvesting, landing, purchase, sale, offer of sale, possession, transport, import, export, or transfer of any fish, or attempts to do any of the above.

(j) Interfere with, obstruct, delay, or prevent by any means an investigation, search, seizure, or disposition of seized property in connection with enforcement of the Magnuson-Stevens Act or any other statute administered by NOAA.

(k) Fish in violation of the terms or conditions of any permit or authorization issued under the Magnuson-Stevens Act or any other statute administered by NOAA.

(l) Fail to report catches as required while fishing pursuant to an exempted fishing permit.

(m) On a scientific research vessel, engage in fishing other than recreational fishing authorized by applicable state or Federal regulations.

(n) Trade, barter, or sell; or attempt to trade, barter, or sell fish possessed or retained while fishing pursuant to an authorization for an exempted educational activity.

(o) Harass or sexually harass an authorized officer or an observer.

(p) Fail to submit to a USCG safety examination when required by NMFS pursuant to Sec. 600.746.

(q) Fail to display a Commercial Fishing Vessel Safety Examination decal or a valid certificate of compliance or inspection pursuant to Sec. 600.746.

(r) Fail to provide to an observer, a NMFS employee, or a designated observer provider information that has been requested pursuant to Sec. 600.746, or fail to allow an observer, a NMFS employee, or a designated observer provider to inspect any item described at Sec. 600.746.

(s) Fish without an observer when the vessel is required to carry an observer.

(t) Assault, oppose, impede, intimidate, or interfere with a NMFS-approved observer aboard a vessel.

(u) Prohibit or bar by command, impediment, threat, coercion, or refusal of reasonable assistance, an observer from conducting his or her duties aboard a vessel.

(v) to end on page 84 of CFR 50 part 600 to end; omitted. The material does not pertain to observers, observer deployment or placement. It will be made available upon request.

TITLE 50--WILDLIFE AND FISHERIES

DEPARTMENT OF COMMERCE

PART 600--MAGNUSON-STEVENS ACT PROVISIONS--Table of Contents

Subpart H--General Provisions for Domestic Fisheries

50 CFR Sec. 600.746 Observers.

(a) Applicability. This section applies to any fishing vessel required to carry an observer as part of a mandatory observer program or carrying an observer as part of a voluntary observer program under the Magnuson-Stevens Act, MMPA (16 U.S.C. 1361 et seq.), the ATCA (16 U.S.C. 971 et seq.), the South Pacific Tuna Act of 1988 (16 U.S.C. 973 et seq.), or any other U.S. law.

(b) Observer requirement. An observer is not required to board, or stay aboard, a vessel that is unsafe or inadequate as described in paragraph (c) of this section.

(c) Inadequate or unsafe vessels. (1) A vessel is inadequate or unsafe for purposes of carrying an observer and allowing operation of normal observer functions if it does not comply with the applicable regulations regarding observer accommodations (see 50 CFR parts 229,
285, 300, 600, 622, 648, 660, 678, and 679) or if it has not passed a USCG safety examination or inspection. A vessel that has passed a USCG safety examination or inspection must display one of the following:

(i) A current Commercial Fishing Vessel Safety Examination decal,
issued within the last 2 years, that certifies compliance with regulations found in 33 CFR, chapter I and 46 CFR, chapter I;

(ii) A certificate of compliance issued pursuant to 46 CFR 28.710;
or

(iii) A valid certificate of inspection pursuant to 46 U.S.C. 3311.

(2) Upon request by an observer, a NMFS employee, or a designated observer provider, a vessel owner/operator must provide correct information concerning any item relating to any safety or accommodation requirement prescribed by law or regulation. A vessel owner or operator must also allow an observer, a NMFS employee, or a designated observer provider to visually examine any such item.

(3) Pre-trip safety check. Prior to each observed trip, the observer is encouraged to briefly walk through the vessel's major spaces to ensure that no obviously hazardous conditions exist. In addition, the observer is encouraged to spot check the following major items for compliance with applicable USCG regulations:

(i) Personal flotation devices/immersion suits;

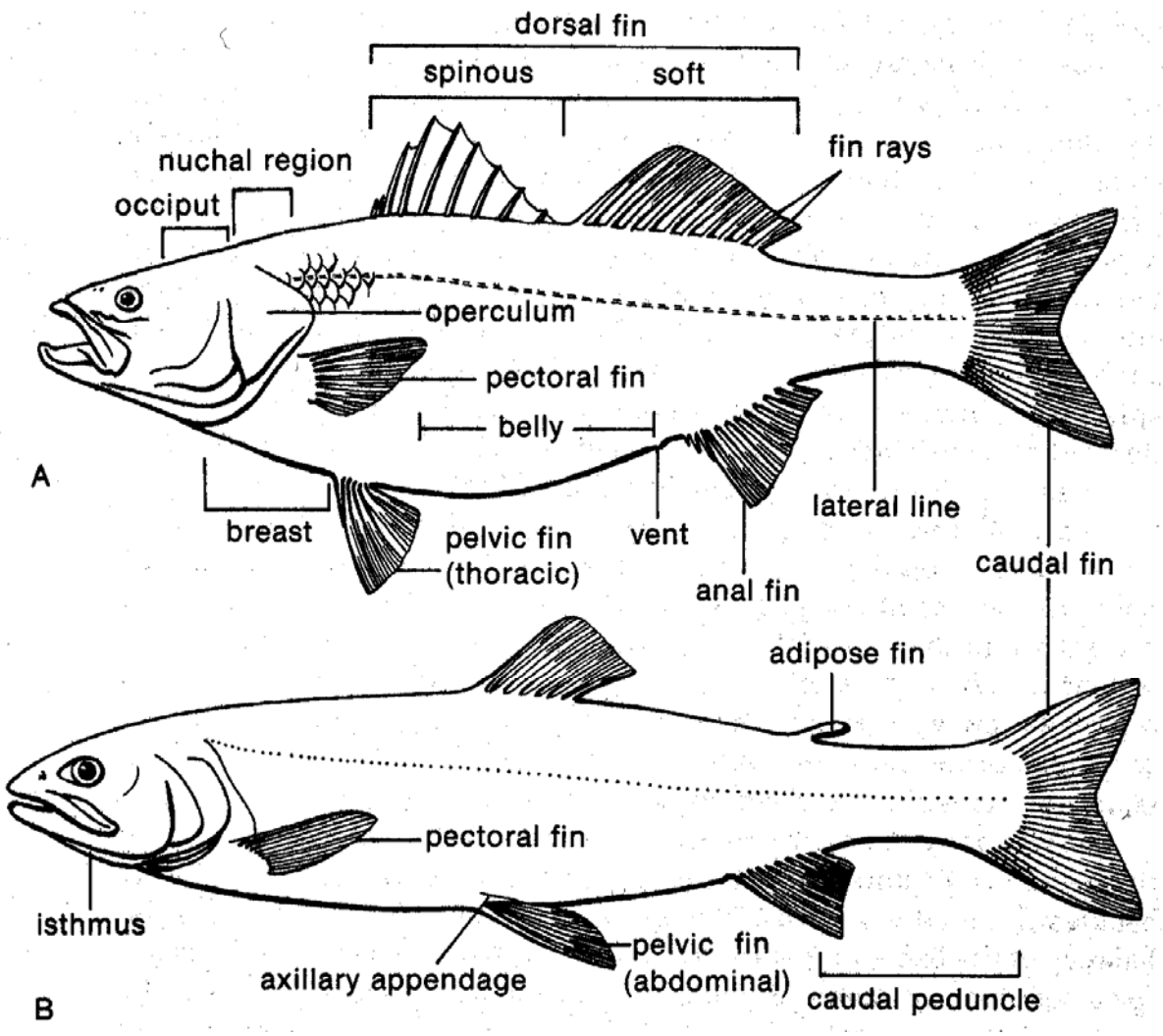
(ii) Ring buoys;

(iii) Distress signals;

(iv) Fire extinguishing equipment;

(v) Emergency position indicating radio beacon (EPIRB), when required; and

(vi) Survival craft, when required.



From *Biology of Fishes* by Carl Bond, 1979. Saunders College Publishing

A.Example of a typical spiny rayed fish. (Order Perciformes)
B.Example of a typical soft rayed fish. (Order Salmoniformes)